SONY

3-758-350-21(1)

Video Cassette Recorder

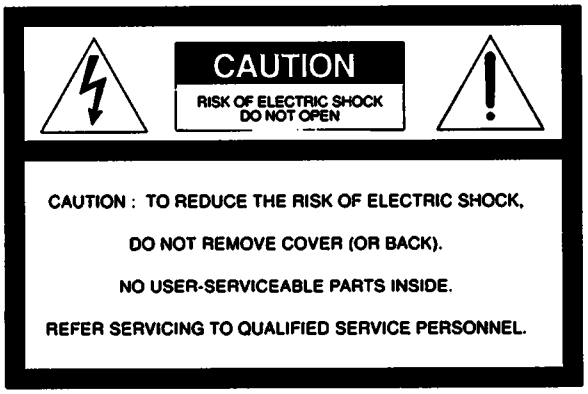
Operating Instructions

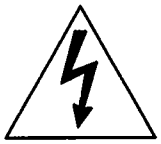
EV-S7000

© 1994 by Sony Corporation

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION

To prevent electric shock, do not use this polarized AC plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Precautions

Safety

- Operate the unit only on 120 V AC, 60 Hz.
- If anything falls into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your Sony dealer.
- Unplug the unit from the wall outlet if you do not intend to use it for an extended period of time. To disconnect the cord, pull it out by the plug, never by the cord.

Installing

- Allow adequate air circulation to prevent internal heat buildup.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Do not install the unit in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the unit and cassettes away from equipment with strong magnets, such as microwave ovens or large loudspeakers.
- Do not place heavy objects on the unit.
- If the unit is brought directly from a cold to a warm location, moisture may condense inside the VCR and cause damage to the video head and tape. When you first install the unit, or when you move it from a cold to a warm location, wait for about one hour before operating the unit.

Information

For customers in the USA

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Caution

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmission and/or program owner.

Owner's record

The model number is located at the rear and front of the unit and the serial number on the top. Record the serial number in the space provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. EV-S7000 Serial No. _____

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Welcome!

Thank you for purchasing the Sony Video Cassette Recorder [illegible] (VCR). Here are some of the features you'll enjoy with your VCR:

- TIME CODE function for more precise, higher-quality editing
- Advanced editing function that lets you preset 8 events to be edited
- Flying erase head for smooth transfer between inserted portions
- PCM audio recording system feature that allows you to take advantage of the latest technology in high-grade audio systems
- JOG dial and SHUTTLE ring for easy search operations
- LANC jack to connect peripheral equipment such as another VCR which can then be controlled by this VCR
- VCR Plus+ system that lets you quickly and easily preset the VCR to record programs
- Cable box control that allows your VCR to control channel selection on most brands of cable boxes
- Remote commander that features multi-brand TV control

* VCR Plus+ and PlusCode are trademarks of Gemstar Development Corporation. The VCR Plus+ system is manufactured under license from Gemstar Development Corporation.

Hi8 (high eight) video system

Both Hi8 and standard 8 cassette tapes can be used with this VCR. Refer to the charts below for the compatibility between the Hi8 video system and the standard 8 system.

When playing a tape

This VCR automatically detects the type of tape being played, either Hi8 or standard 8. This VCR also automatically detects the tape speed (either SP or LP) the tape was recorded in.

Tape type	Recording format	Playback mode
Hi8 tape	Hi8 (high eight)	Hi8 (high eight)
	8 (standard 8mm)	8 (standard 8mm)
Standard 8 tape	8 (standard 8mm)	8 (standard 8mm)

When recording on a tape

You can set this VCR to record in either Hi8 or standard 8 format. See "Using the SET UP menu" on page **32**.

Tape type	Recording format	SET UP MENU setting
Hi8 tape	Hi8 (high eight)	AUTO
	8 (standard 8mm)	OFF
Standard 8 tape	8 (standard 8mm)	AUTO or OFF

Notes

- Hi8 recording or playback can only be done using a Hi8 tape.
- You cannot make Hi8 format recordings on standard 8 tapes.

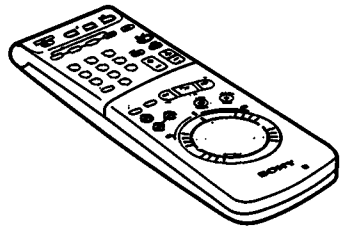
Saving a recording

Slide out the tab on the cassette so that the red color appears.
To re-record on the cassette, slide the tab back.

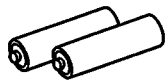
Step 1: Unpacking

Check that you have the following items:

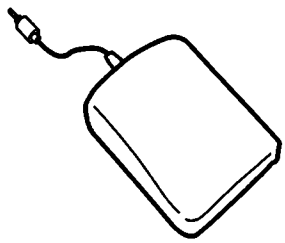
- **Remote commander**



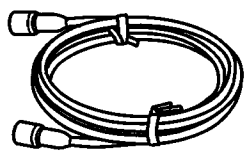
- **Size AA (R6) batteries**



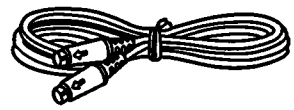
- **Cable mouse (cable box controller)**



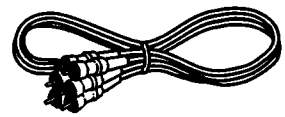
- **75-ohm coaxial cable with F-type connectors**



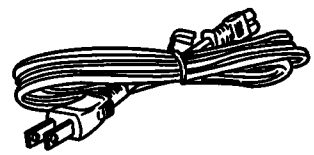
- **S-video cable**



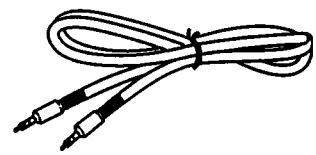
- **Audio/video cable (3-phono to 3-phono)**



- **AC power cord**



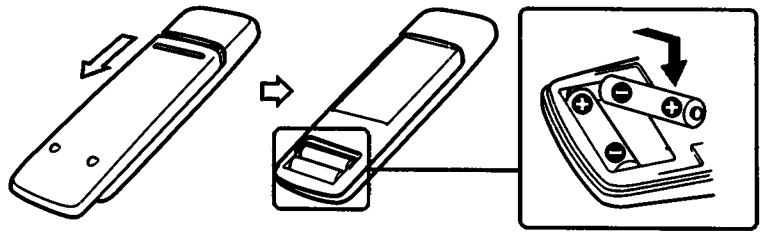
- **LANC cable**



Step 2: Setting up the remote commander

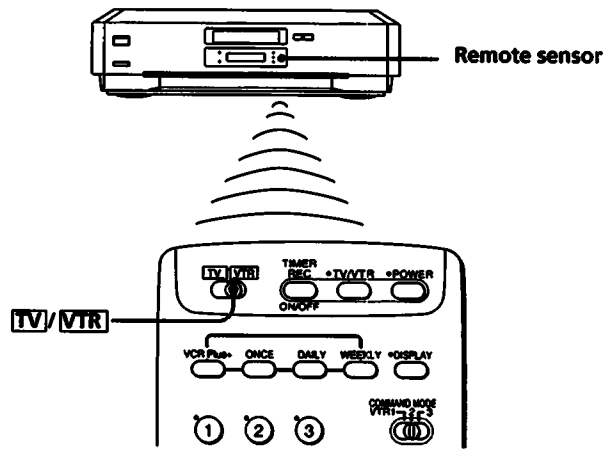
Inserting the batteries

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your TV.

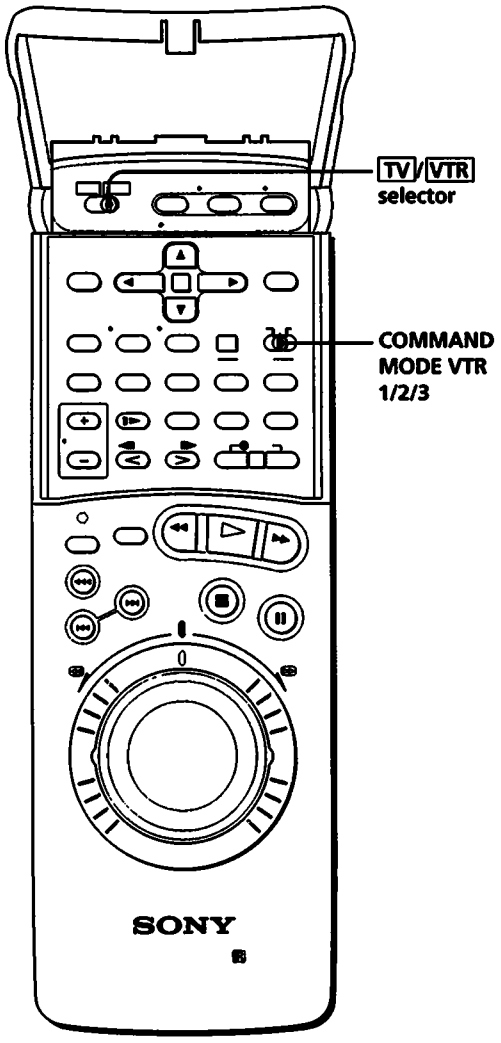


To operate	Set TV / VTR to
the VCR	VTR and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

Notes

- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

Step 2 Setting up the remote commander (continued)



Note

- If you set the COMMAND MODE VTR OFF/1/2/3 selector on the VCR to "OFF," you can no longer control this VCR from any other Sony remote commanders.

Setting the command mode

You can select three different positions for the command mode setting.

1 **Turn on the VCR, then press OPERATION PANEL OPEN/CLOSE to open the operation panel.**
Set the COMMAND MODE VTR OFF/1/2/3 selector on the VCR to "VTR 2."

2 **Set the COMMAND MODE VTR 1/2/3 selector on the remote commander to "VTR 2."**

3 **Set the TV/VTR remote control selector on the remote commander to "VTR."**

Controlling other Sony video equipment if other Sony video equipment has a COMMAND MODE selector

1 Set the COMMAND MODE 1/2/3 selector on the remote commander to a position other than the one you selected for this VCR.
2 Set the COMMAND MODE selector of any other video equipment to the same position you selected in step **1**.

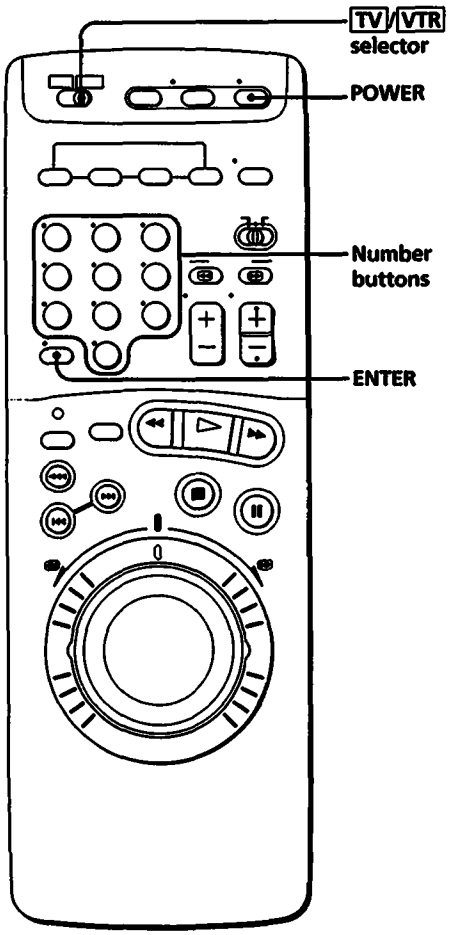
If other Sony video equipment does not have a COMMAND MODE selector

You can control other Sony video equipment using the following COMMAND MODE settings.

1) Infrared remote controlled Sony Betamax VCRs: position 1 (Some units may not be controlled in this mode.)
2) Sony 8 mm format VCRs: position 2
3) Sony VHS format VCRs: position 3

Notes

- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries in the remote commander, the code number automatically resets to 1 (Sony). Reset the appropriate code number.



Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV/VTR on the top of the remote commander to TV.
2 Press and hold down POWER, and then enter your TV's code number(s) using the number buttons. Press the ENTER button. Then release POWER.
Code numbers are listed below.
Now you can use the buttons marked with a dot (•) to control your TV. To control the VCR, reset TV/VTR to VTR.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony	*1*
Akai	*4*
AOC	*4*
Centurion	*12*
Coronado	*3*
Curtis-Mathes	*12*
Daytron	*12*
Fisher	*11*
General Electric	*6, 10*
Hitachi	*2, 3*
J. C. Penney	*4, 12*
JVC	*9*
KMC	*3*
Magnavox	*3, 8, 12*
Marantz	*4, 13*
MGA/Mitsubishi	*4, 12, 13, 17*
NEC	*4, 12*
Panasonic	*6*

Manufacturer	Code number
Philco	*3, 4*
Philips	*8*
Pioneer	*16*
Portland	*3*
Quasar	*6*
Radio Shack	*5, 14*
RCA	*4, 10*
Sampo	*12*
Sanyo	*11*
Scott	*12*
Sears	*7, 10, 11*
Sharp	*3, 5, 18*
Sylvania	*8, 12*
Teknika	*3, 8, 14*
Toshiba	*7*
Wards	*3, 4, 12*
Yorx	*12*
Zenith	*15*

Step 3: Hookups

Selecting the best hookup option

Before you can use your VCR for the first time, you need to connect it to your TV and set it up to receive programs for viewing and recording. This section explains how to hook up and set up your VCR so that you can start enjoying it right away. There are, however, many types of TVs available and many ways in which your TV can be hooked up. For these reasons, this manual describes several ways your VCR can be connected.

To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

If you have	Use	Refer to
TV that has audio/video inputs	Audio/video (A/V) hookup, then follow one of the hookups below.	Page 11
Cable TV with cable box	Hookup 1	Page 12
Cable TV without cable box	Hookup 2	Page 14
Antenna only, no cable TV	Hookup 3	Page 16

Caution
Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the VCR to an antenna or make simultaneous (parallel) antenna and VCR connections at the antenna terminals of your receiver.

Note to CATV system installer
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

After you've completed the connections, follow the instructions for setup including VCR Plus+ setup. During setup, if you need more details of the procedure described, page numbers are provided where you can find complete, step-by-step instructions.

After you've completed the setup, you're ready to use your VCR. Procedures differ depending on the hookup you used. For an overview, refer to "Quick reference to using the VCR" on the back cover.

Before you get started

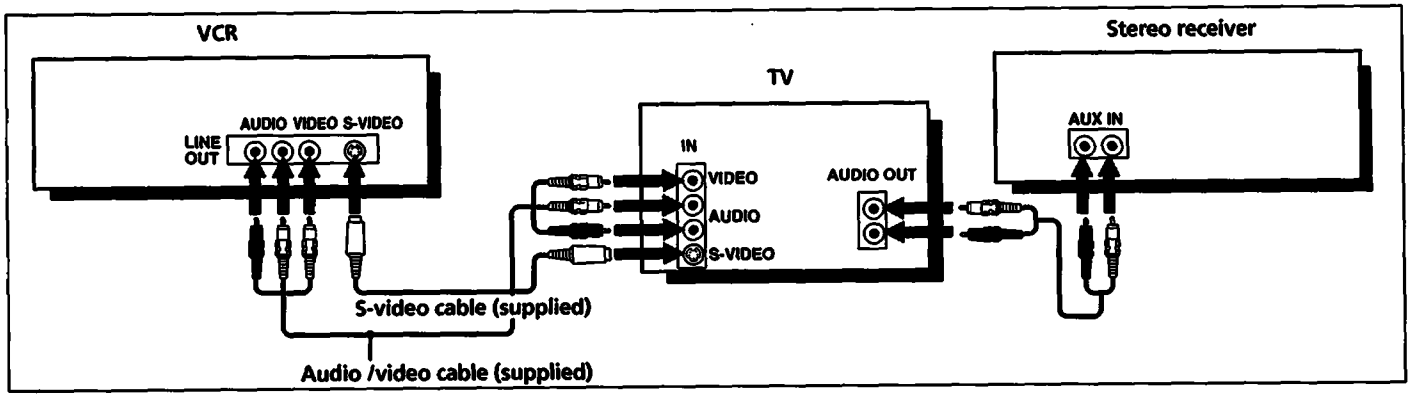
- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician.

Audio/video (A/V) hookup

If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

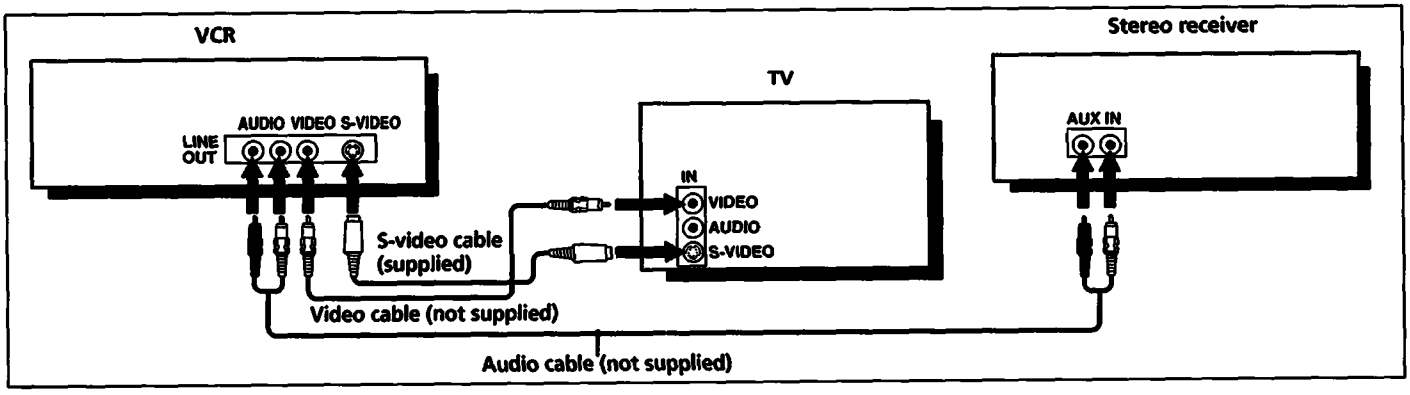
If you're planning to use your VCR only to play back pictures and movies, you're finished setting up the VCR after you've made these connections. If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

A Use this hookup if your TV has stereo jacks



If your TV is equipped with S-video jacks, then use the S-video connection.

B Use this hookup if your TV doesn't have stereo jacks



If your TV is equipped with S-video jacks, then use the S-video connection.

A/V hookup: VCR setup

After you've connected your TV and completed antenna or cable hookup, use the following procedure to set up the VCR.

Press MENU and select SET UP MENU.

```
MENU                    PAGE1
▶TIMER SET/CHECK
  SET UP MENU
  TUNER PRESET
  SET VCR Plus+ CHANNELS
  CABLE BOX CONTROL
  CLOCK SET

Use ▲ ▼ to select an
item, then push EXECUTE
```

Set AUTO ANT SEL to OFF and press EXECUTE.

```
SET UP MENU             PAGE2

  HiFi              ●AUTO OFF
▶AUTO ANT SEL        ON  ●OFF
  AUTO STEREO        ON  ●OFF
  L IN 1 VIDEO      ●STD  S
  SAP               ●AUTO OFF

Use ▲ ▼ to select an
item, then push ◀ ▶
```

For details, see page 32.

Hookup 1

Using cable box control

Recommended use

This hookup is recommended for most cable systems with cable boxes. It allows the VCR's cable box control feature to control the channel on the cable box, simplifying the recording process. You should use this hookup if you have a cable box, especially if your cable system scrambles all or most channels. A list of compatible cable boxes is on page **28**.

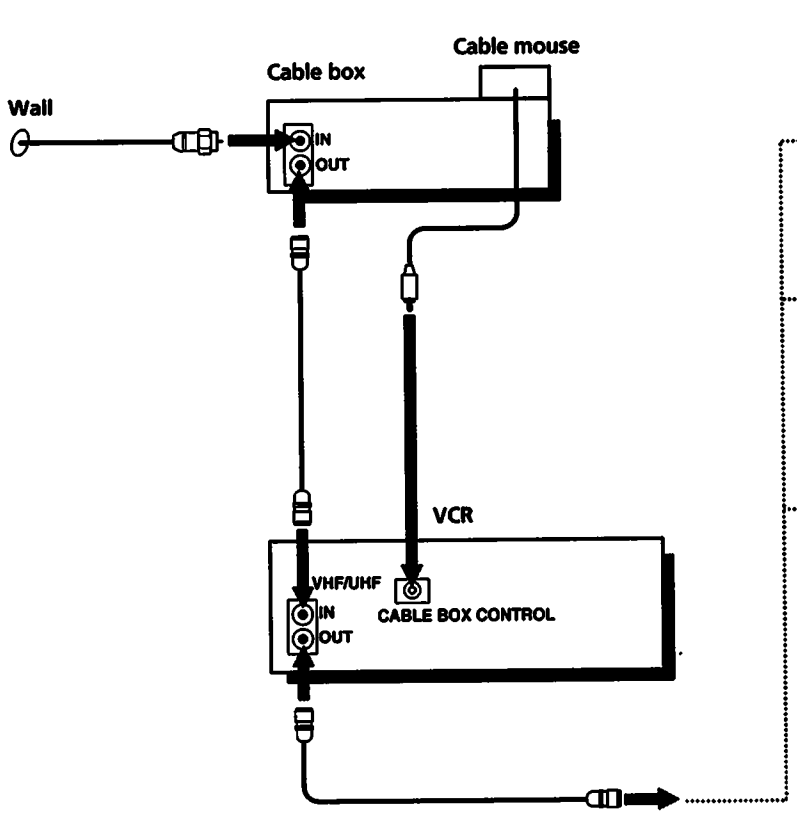
What you can and can't do with this hookup

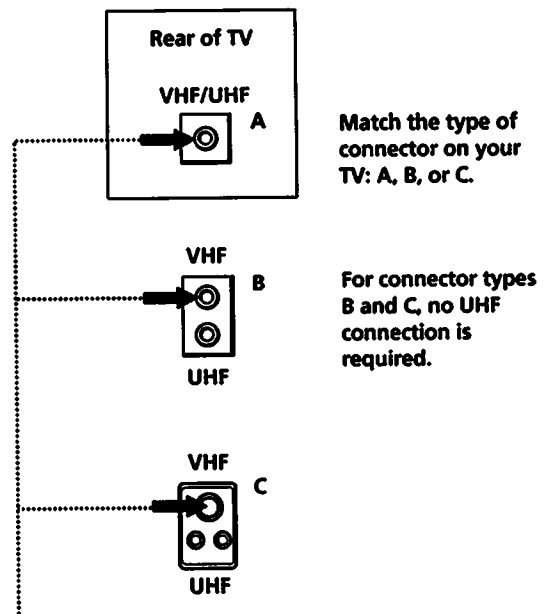
What you can do

- Record any channel by using the VCR's cable box control feature to select channels on the cable box

What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel





Match the type of connector on your TV: A, B, or C.

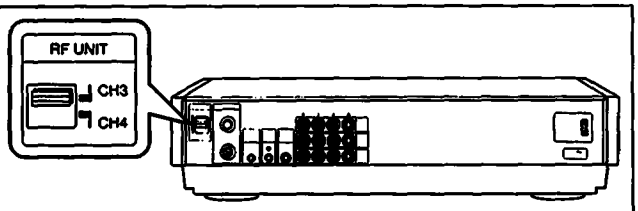
For connector types B and C, no UHF connection is required.

Positioning the cable mouse

Position the cable mouse on the cable box as shown below. Make sure that the front of the cable mouse projects out above the cable box sensor so that signals from the cable mouse are transmitted correctly to the cable box.

Hookup 1: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **11**), you can skip this step.



For details, see page 72.

2 Turn on your cable box.

3 Set NORMAL/CATV to CATV:

Press MENU and select TUNER PRESET.

```
MENU                    PAGE1
▶TIMER SET/CHECK
  SET UP MENU
  TUNER PRESET
  SET VCR Plus+ CHANNELS
  CABLE BOX CONTROL
  CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Set NORMAL/CATV to CATV and press EXECUTE.

```
TUNER PRESET            CH5

▶NORMAL/CATV    NORM●CATV
 AUTO PRESET
 MANUAL SET     ●ADD ERASE
 AFT            ●ON  OFF
 FINE TUNING

Use ▲ ▼ to select an
item,then push ◀ ▶
```

For details, see page 24.

4 Set CABLE BOX CONTROL to ON:

Press MENU and select CABLE BOX CONTROL.

```
MENU                    PAGE1
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
▶CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Select ON and press EXECUTE.

```
CABLE BOX CONTROL

  ●ON     OFF

Use ◀ ▶ to select
Push EXECUTE for first
time setup
Push MENU to quit
```

Enter your cable code number and press EXECUTE.

```
Your CABLE BOX Code No

        --

Enter your CABLE BOX
Code No.using 0-9 keys
Refer to the Operating
Manual for the Code
Then push EXECUTE
```

Select your cable box output channel and press EXECUTE.

```
Your CABLE BOX Output CH

  CH2
 ●CH3
  CH4
  LINE[LINE IN 1 on VCR]

Use ▲ ▼ to select CABLE
BOX CH Then push EXECUTE
```

For details, see page 27.

If your cable box is not compatible

Check with your cable company to see if they can provide a compatible box. If not, use Hookup 2 (or 5, if you have only a few scrambled channels) or Hookup 4 (if you have many scrambled channels).

Hookup 1: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.

```
MENU                    PAGE1
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
▶SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Enter the program guide channel, then the channel you use on your TV.

```
SET VCR Plus+ CHANNELS

  GUIDE CH   TV CH
     25   -   75

Push 0-9 keys to set
program GUIDE CH

Or,push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

Program guide channel

Your actual TV channel

Press EXECUTE.

For details, see page 31.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 1) so that you can always follow the correct instructions.

Hookup 2

No cable box or Incompatible cable box and few scrambled channels

Recommended use

Use this hookup if you do not have a cable box. Also use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles only a few channels.

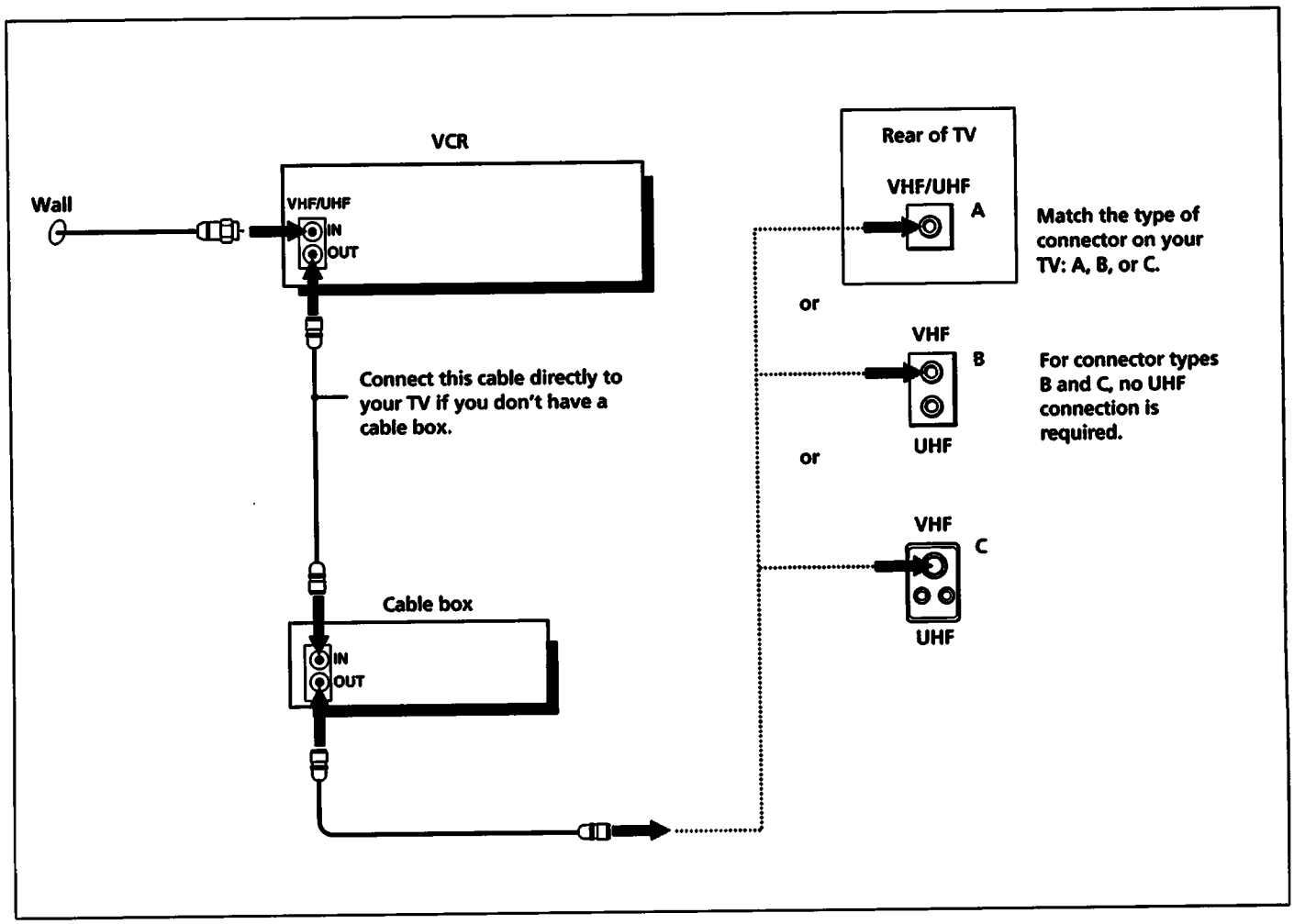
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel

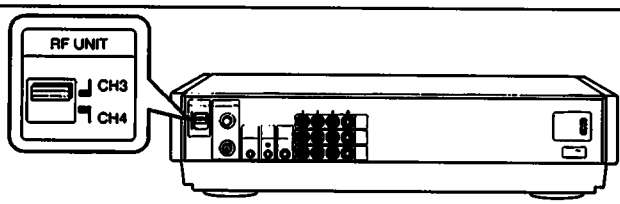
What you can't do

- Record scrambled channels that require a cable box



Hookup 2: VCR setup

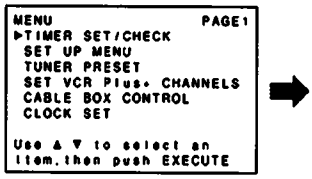
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **11**), you can skip this step.



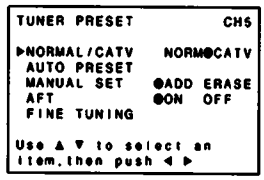
For details, see page 72.

2 Set NORMAL/CATV to CATV:

Press MENU and select TUNER PRESET.



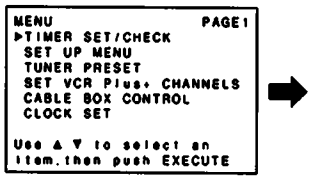
Set NORMAL/CATV to CATV and press EXECUTE.



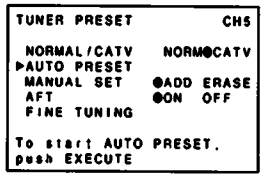
For details, see page 24.

3 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.



Select AUTO PRESET and press EXECUTE.



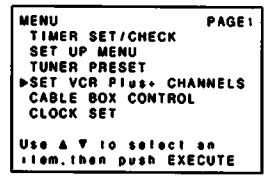
For details, see page 24.

Hookup 2: VCR Plus+ channel setup

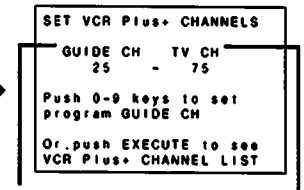
1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.



Enter the program guide channel, then the channel you use on your TV.



Program guide channel

Your actual TV channel

Press EXECUTE.

For details, see page 31.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 2) so that you can always follow the correct instructions.

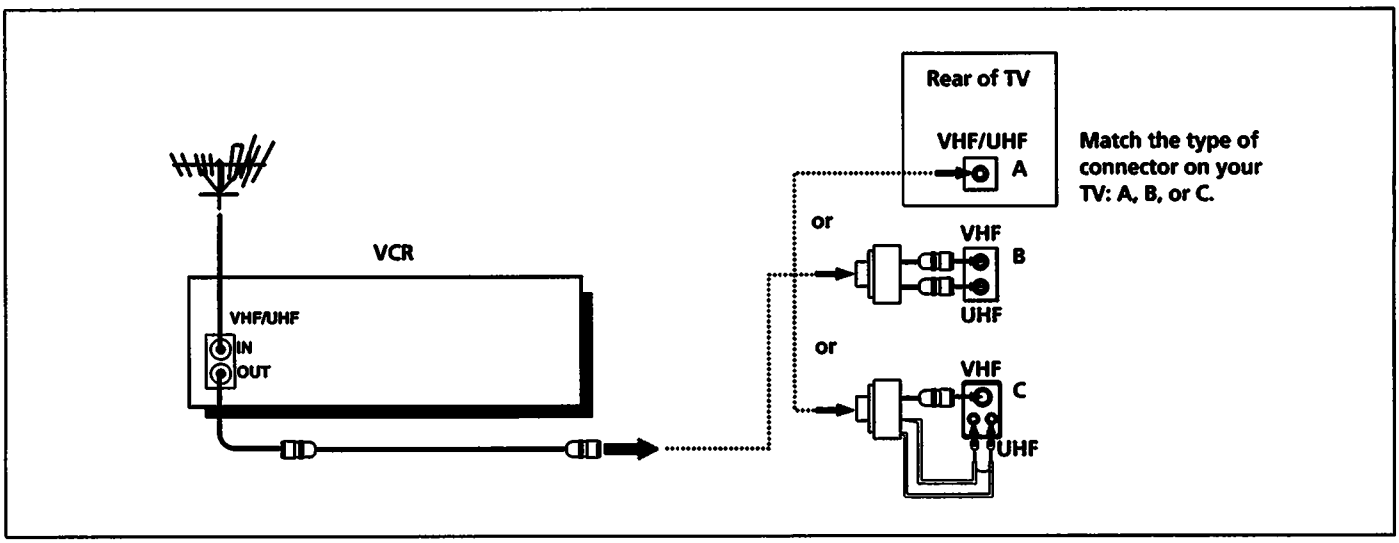
Hookup 3

have cable TV).

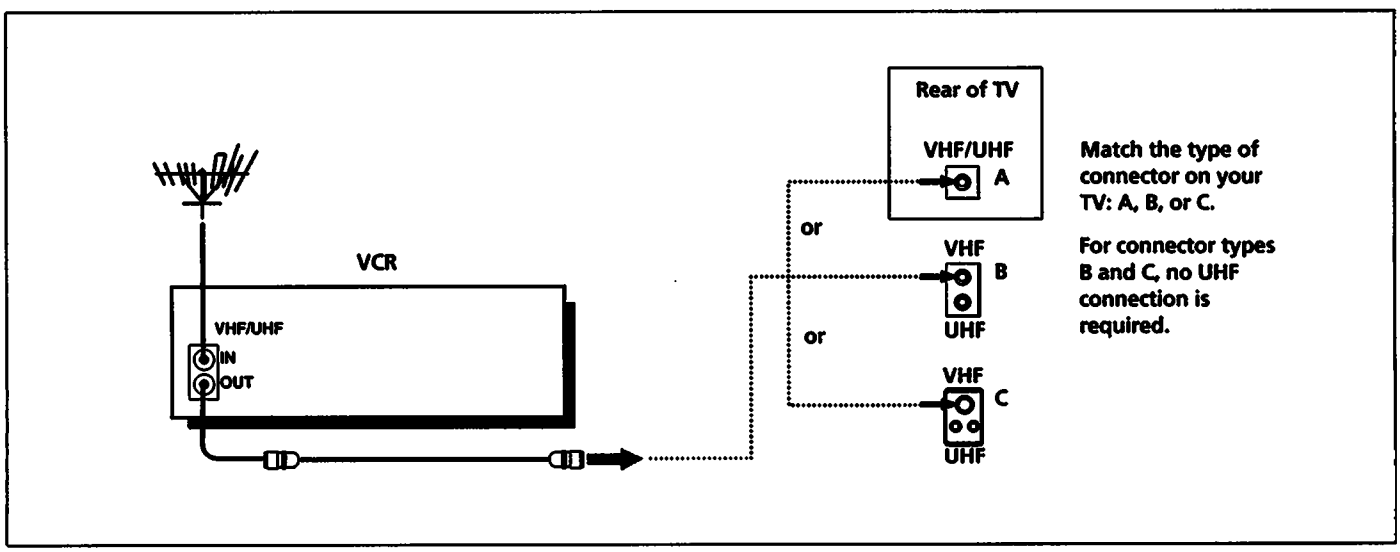
Antenna hookup

A Use this hookup if you're using:

- VHF/UHF antenna (you get channels 2-13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- separate VHF and UHF antennas



B Use this hookup if you're using a VHF-only antenna (you get channels 2-13 only)

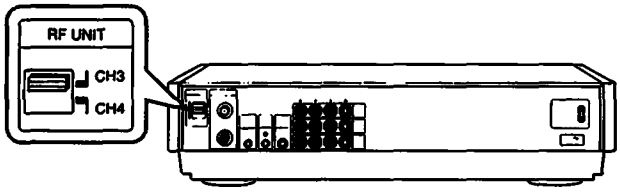


If you cannot connect your antenna cable to the VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach the external antenna connector (not supplied) so that you can connect the cable to the VHF/UHF IN jack. If you have separate cables for VHF and UHF antennas, you may use a U/V band mixer (not supplied). For details, see page **72**.

Hookup 3: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **11**), you can skip this step.



For details, see page 72.

2 Set NORMAL/CATV to NORM:

Press MENU and select TUNER PRESET.

```
MENU                    PAGE1
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Set NORMAL/CATV to NORM and press EXECUTE.

```
TUNER PRESET            CH5

▶NORMAL/CATV   ●NORM CATV
 AUTO PRESET
 MANUAL SET    ●ADD ERASE
 AFT           ●ON  OFF
 FINE TUNING

Use ▲ ▼ to select an
item,then push ◀ ▶
```

For details, see page 24.

3 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.

```
MENU                    PAGE1
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Select AUTO PRESET and press EXECUTE.

```
TUNER PRESET            CH5

 NORMAL/CATV   ●NORM CATV
▶AUTO PRESET
 MANUAL SET    ●ADD ERASE
 AFT           ●ON  OFF
 FINE TUNING

To start AUTO PRESET,
push EXECUTE
```

For details, see page 24.

Hookup 3: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.

```
MENU                    PAGE1
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
▶SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Enter the program guide channel, then the channel you use on your TV.

```
SET VCR Plus+ CHANNELS

  GUIDE CH    TV CH
     25   -    75

Push 0-9 keys to set
program GUIDE CH

Or,push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

Program guide channel

Your actual TV channel

Press EXECUTE.

For details, see page 31.

You are now ready to use your VCR

A **Quick reference** to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 3) so that you can always follow the correct instructions.

Hookup 4

Incompatible cable box and many scrambled channels

Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles all, or most channels.

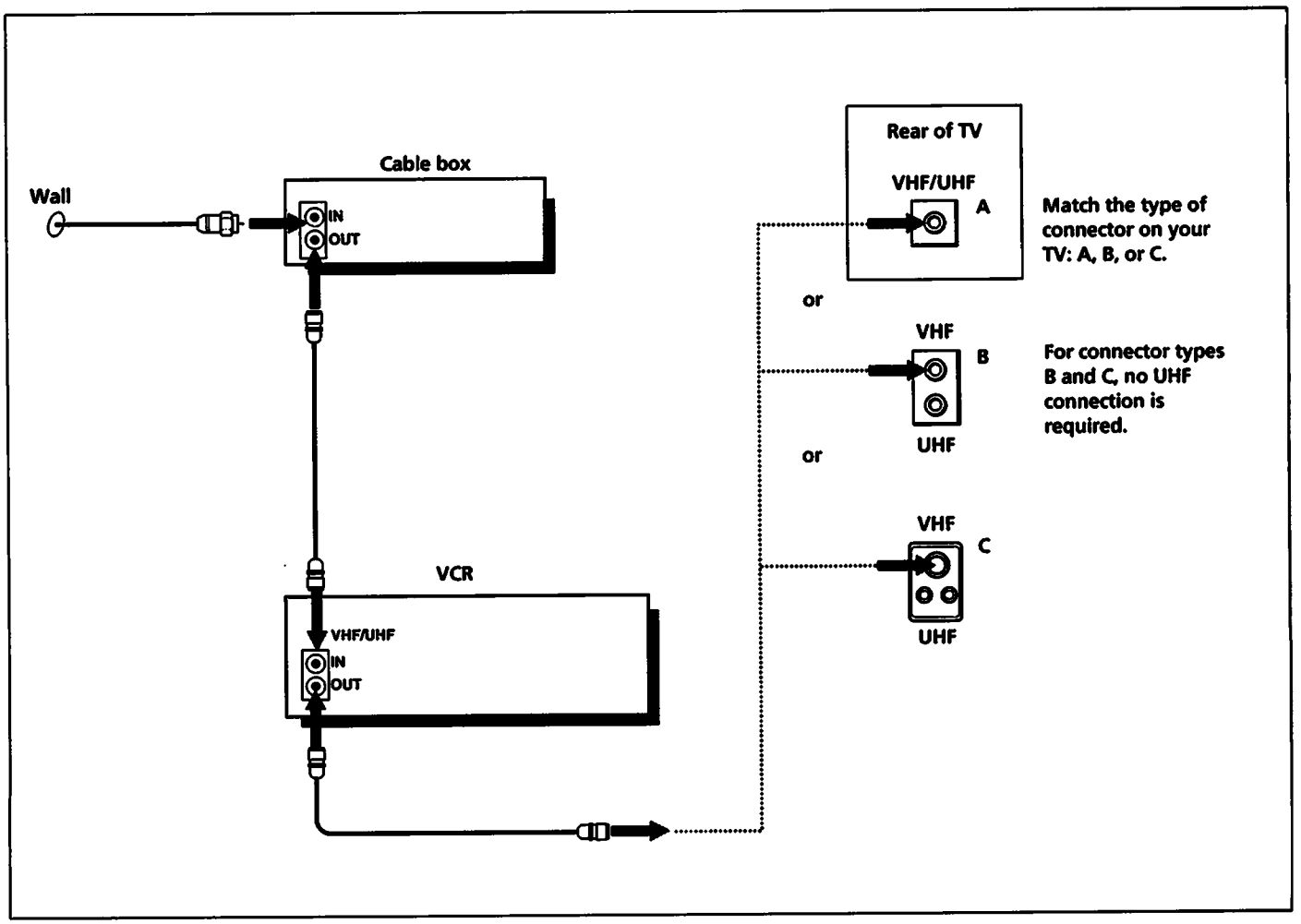
What you can and can't do with this hookup

What you can do

- Record any channel by selecting the channel on the cable box

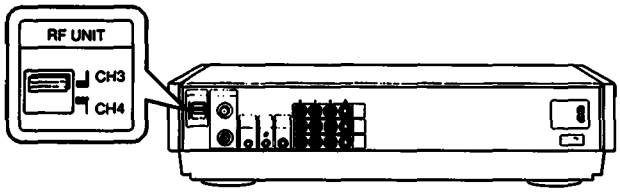
What you can't do

- Record with the cable box turned off
- Record by selecting channels directly with the VCR
- Record one channel while watching another channel



Hookup 4: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **11**), you can skip this step.

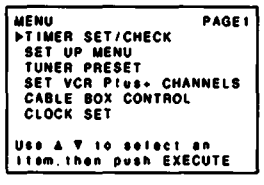


For details, see page 72.

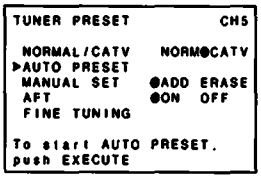
2 Turn on your cable box.

3 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.



Select AUTO PRESET and press EXECUTE.



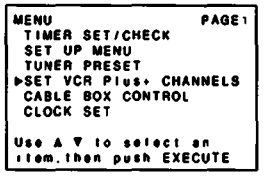
For details, see page 24.

Hookup 4: VCR Plus+ channel setup

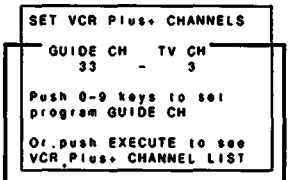
1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 Enter all the channels you want to record and the cable box output channel (usually 2, 3, or 4):

Press MENU and select SET VCR Plus+ CHANNELS.



Enter the program guide channel, then the cable box output channel.



Program guide channel

Your cable box output channel

Press EXECUTE.

For details, see page 31.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 4) so that you can always follow the correct instructions.

Hookup 5

Incompatible cable box with few scrambled channels, using an A/B switch

Recommended use

By using an A/B switch, this hookup allows you to easily record both scrambled and unscrambled channels. With the A/B switch set to position "A," you can record unscrambled channels by selecting channels directly with the VCR. You only use position "B" and the cable box to record a scrambled channel.

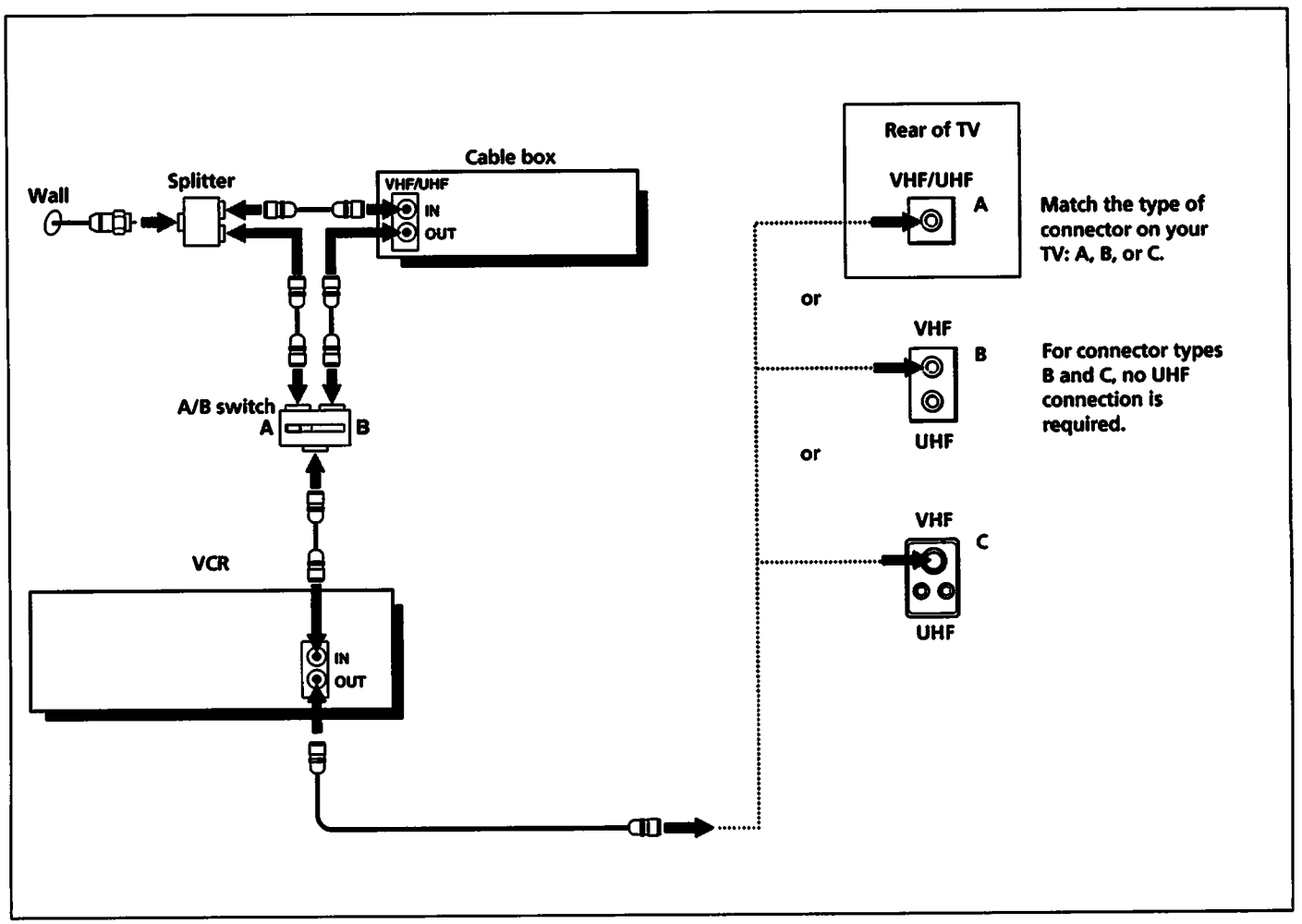
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel by selecting the channel directly with your VCR (the A/B switch is set to "A")
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to "B")

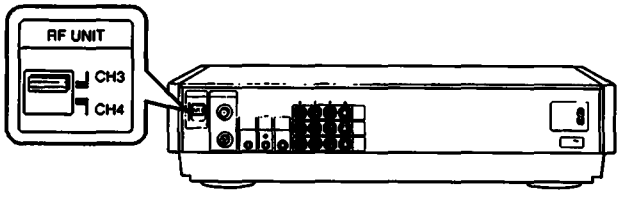
What you can't do

- Record one channel while watching another channel



Hookup 5: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **11**), you can skip this step.



For details, see page 72.

2 Set the A/B switch to "A."

3 Set NORMAL/CATV to CATV:

Press MENU and select TUNER PRESET.

```
MENU                    PAGE1
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Set NORMAL/CATV to CATV and press EXECUTE.

```
TUNER PRESET            CH5

▶NORMAL/CATV    NORM●CATV
 AUTO PRESET
 MANUAL SET     ●ADD ERASE
 AFT            ●ON  OFF
 FINE TUNING

Use ▲ ▼ to select an
item,then push ◀ ▶
```

For details, see page 24.

4 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.

```
MENU                    PAGE1
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Select AUTO PRESET and press EXECUTE.

```
TUNER PRESET            CH5

 NORMAL/CATV    NORM●CATV
▶AUTO PRESET
 MANUAL SET     ●ADD ERASE
 AFT            ●ON  OFF
 FINE TUNING

To start AUTO PRESET,
push EXECUTE
```

For details, see page 24.

5 Preset the cable box output channel (usually 2, 3, or 4):

Press MENU and select TUNER PRESET.

```
MENU                    PAGE1
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Set MANUAL SET to ADD and press EXECUTE.

```
TUNER PRESET            CH3

 NORMAL/CATV    ●NORM CATV
 AUTO PRESET
▶MANUAL SET     ●ADD ERASE
 AFT            ●ON  OFF
 FINE TUNING

Select CH with 0-9  Push
ENTER ◀ ▶ to ADD/ERASE
```

For details, see page 27.

Hookup 5: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 For unscrambled channels, if the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.

```
MENU                    PAGE1
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
▶SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Enter the program guide channel, then the channel you use on your TV.

```
SET VCR Plus+ CHANNELS

  GUIDE CH    TV CH
     25    -    75

Push 0-9 keys to set
program GUIDE CH

Or,push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

Program guide channel

Your actual TV channel

Press EXECUTE.

For details, see page 31.

3 For scrambled channels, enter all the scrambled channels you want to record and the cable box output channel (usually 2, 3, or 4):

Press MENU and select SET VCR Plus+ CHANNELS.

```
MENU                    PAGE1
 TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
▶SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item,then push EXECUTE
```

Enter the program guide channel, then the cable box output channel.

```
SET VCR Plus+ CHANNELS

  GUIDE CH    TV CH
     33    -     3

Push 0-9 keys to set
program GUIDE CH

Or,push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

Program guide channel

Your cable box output channel

Press EXECUTE.

For details, see page 31.

Incompatible cable box with few scrambled channels, using an A/B switch (continued)

You are now ready to use your VCR

To play a tape

1 Set the TV to channel 3 or 4 (or to video input, if you have made A/V connections).
2 Insert a cassette and press ▷ PLAY.

To record an unscrambled channel

1 Set the A/B switch to "A."
2 Press VCR Plus+ on the remote commander.
3 Enter the program's PlusCode number.
4 Press ONCE, DAILY, or WEEKLY.
5 Insert a cassette.
6 Press TIMER REC ON/OFF.

To record a scrambled channel

1 Set the A/B switch to "B."
2 Turn on the cable box.
3 Set the cable box to the channel you want to record.
4 Press VCR Plus+ on the remote commander.
5 Enter the program's PlusCode number.
6 Press ONCE, DAILY, or WEEKLY.
7 Insert a cassette.
8 Press TIMER REC ON/OFF.
9 Leave the cable box on.

To watch TV

1 Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Set the A/B switch to "B."
3 Turn on your cable box.
4 Set the TV to the cable box output channel (usually 2, 3, or 4).
5 Set the cable box to the channel you want to watch.

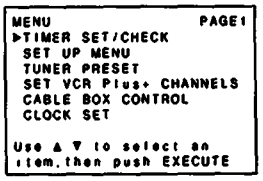
Setting the clock

Set the time and date to use the timer feature for recording programs.

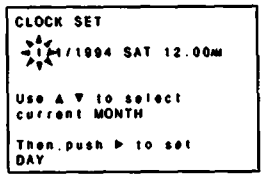
Note

- If you don't set the clock, the tape indicator does not appear in the display window.

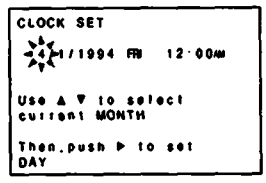
1 **Press MENU.**
The main MENU appears on the TV screen.



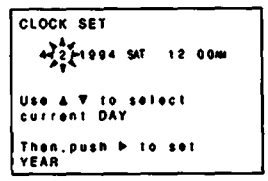
2 **Press CURSOR ▲/▼ to move the cursor (▶) to CLOCK SET, then press EXECUTE.**
The CLOCK SET menu appears on the TV screen and the month is highlighted.



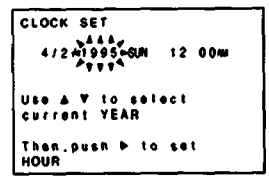
3 **Set the month using CURSOR ▲/▼.**



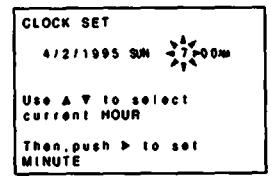
4 **Press CURSOR ▶ to highlight the day. Set the day using CURSOR ▲/▼.**
The day of the week is set automatically.



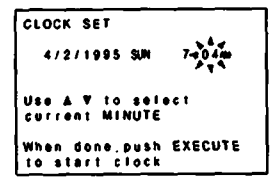
5 **Press CURSOR ▶ to highlight the year. Set the year using CURSOR ▲/▼.**



6 **Press CURSOR ▶ to highlight the hour. Set the hour using CURSOR ▲/▼.**



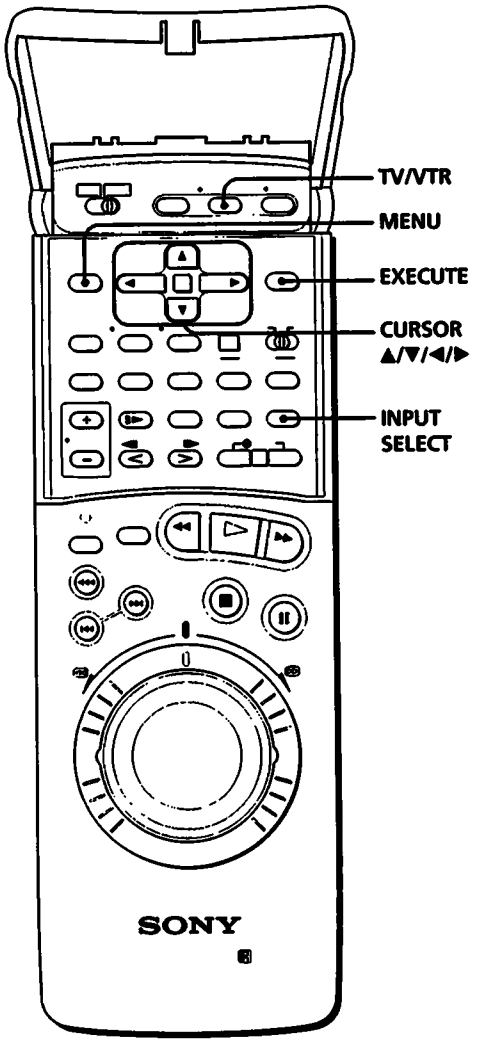
7 **Press CURSOR ▶ to highlight the minutes. Set the minutes using CURSOR ▲/▼.**



8 **Press EXECUTE to start the clock.**

Presetting channels

(Skip this section if you are using cable box control.)



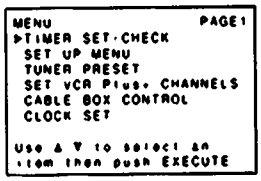
This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting. Then, if there are any unwanted channels, disable them manually. If you have decided which channels you wish to preset, set them directly using manual presetting.

Before you start...

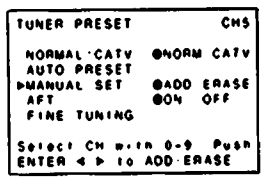
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.
- Press INPUT SELECT so that a channel number appears in the VCR's display window.

Presetting all receivable channels automatically

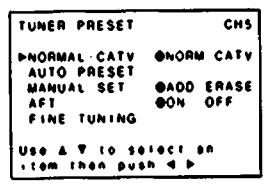
1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press CURSOR ▲/▼ to move the cursor (▶) to TUNER PRESET, then press EXECUTE.**
The TUNER PRESET menu appears on the TV screen.

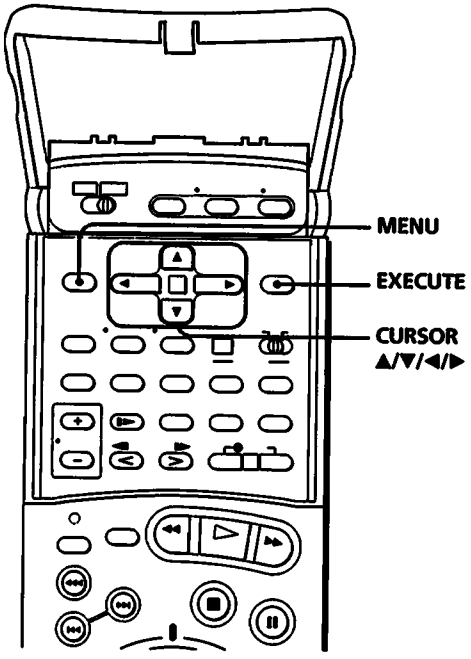


3 **Press CURSOR ▲/▼ to move the cursor (▶) to NORMAL/CATV.**


TUNER PRESET CH5
▶NORMAL·CATV ●NORM CATV
AUTO PRESET
MANUAL SET ●ADD ERASE
AFT ●ON OFF
FINE TUNING
Use ▲ ▼ to select an item then push ◀ ▶

4 **Select NORM or CATV using CURSOR ◀/▶:**

- To preset cable TV channels, select CATV.
- To preset VHF and UHF channels, select NORM.



5 **Press CURSOR ▲/▼ to move the cursor (▶) to AUTO PRESET, then press EXECUTE.**

All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.

```
TUNER PRESET              CH5
 NORMAL/CATV     NORM●CATV
▶AUTO PRESET
 MANUAL SET      ●ADD ERASE
 AFT             ●ON  OFF
 FINE TUNING

To start AUTO PRESET,
push EXECUTE
```

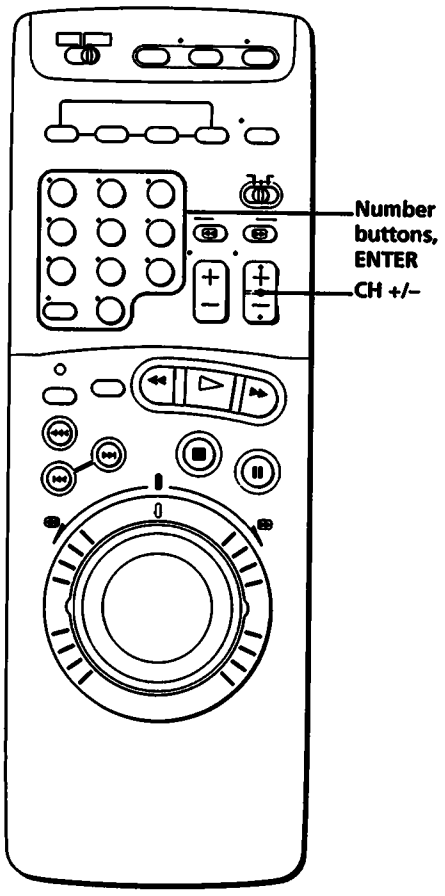
Presetting/disabling channels manually

1 **Display the TUNER PRESET menu.**

For instructions, follow steps **1** and **2** in "Presetting all receivable channels automatically."

```
TUNER PRESET              CH5
 NORMAL/CATV    ●NORM CATV
 AUTO PRESET
▶MANUAL SET     ●ADD ERASE
 AFT            ●ON  OFF
 FINE TUNING

Select CH with 0-9. Push
ENTER ◀ ▶ to ADD/ERASE
```



2 **Select the channel to preset or disable:**

- To preset a channel, enter the channel number by pressing the number buttons then ENTER.
- To disable a channel, select the channel number by pressing CH +/–.

```
TUNER PRESET              CH5
 NORMAL/CATV    ●NORM CATV
 AUTO PRESET
▶MANUAL SET     ●ADD ERASE
 AFT            ●ON  OFF
 FINE TUNING

Select CH with 0-9 Push
ENTER ◀ ▶ to ADD/ERASE
```

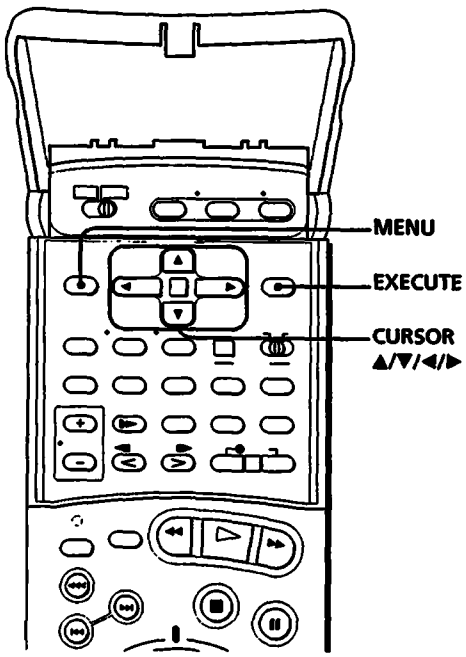
3 **Set MANUAL SET to ADD or ERASE, using CURSOR ▲/▼/◀/▶:**

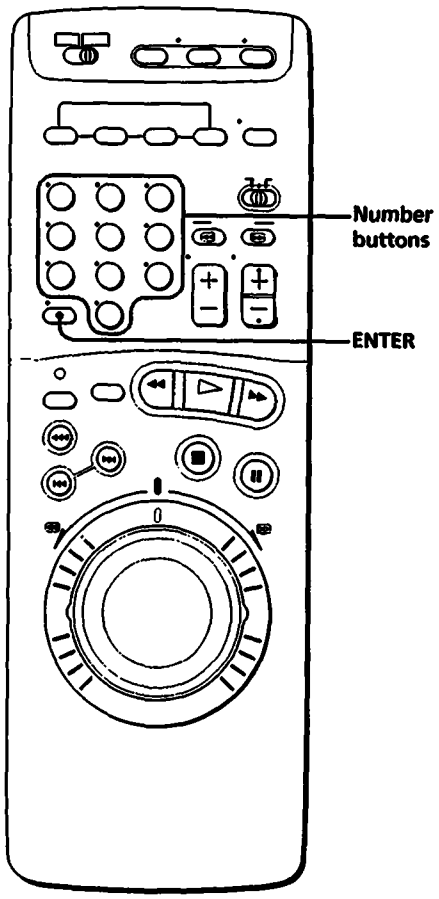
- To preset a channel, select ADD.
- To disable a channel, select ERASE.

```
TUNER PRESET              CH5
 NORMAL/CATV    ●NORM CATV
 AUTO PRESET
▶MANUAL SET     ●ADD ERASE
 AFT            ●ON  OFF
 FINE TUNING

Select CH with 0-9 Push
ENTER ◀ ▶ to ADD/ERASE
```

4 **Repeat steps 2 and 3 to preset or disable channels as required, then press EXECUTE.**





Cable TV channel assignment

Cable TV systems use letters or numerals to designate channels. This VCR is designed to correspond with standard cable systems. The chart below shows the channel numbers on this VCR and the corresponding cable TV channels. Note that the channel number assignment shown in the chart may not correspond to the channel number used by your local cable company. Check with your local cable TV company for more information on the available channels.

Number on this VCR	1	2	3	...	12	13	14	15	16	17
Cable TV channel	A-8	2	3	...	12	13	A	B	C	D

18	19	20	21	22	23	24	25	26	27	28	29	30	31
E	F	G	H	I	J	K	L	M	N	O	P	Q	R

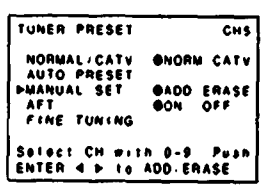
32	33	34	35	36	37	38	...	93	94	95	96	97	98
S	T	U	V	W	W+1	W+2	...	W+57	W+58	A-5	A-4	A-3	A-2

99	100	101	...	124	125
A-1	W+59	W+60	...	W+83	W+84

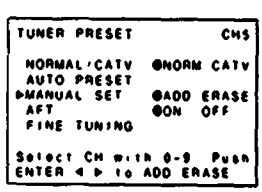
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you may also use the manual tuning function.

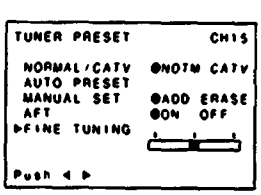
1 **Display the TUNER PRESET menu.**
For instructions, follow steps **1** and **2** in "Presetting all receivable channels automatically."



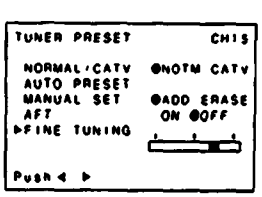
2 **Select the channel you want to fine-tune by pressing the number buttons and then ENTER.**



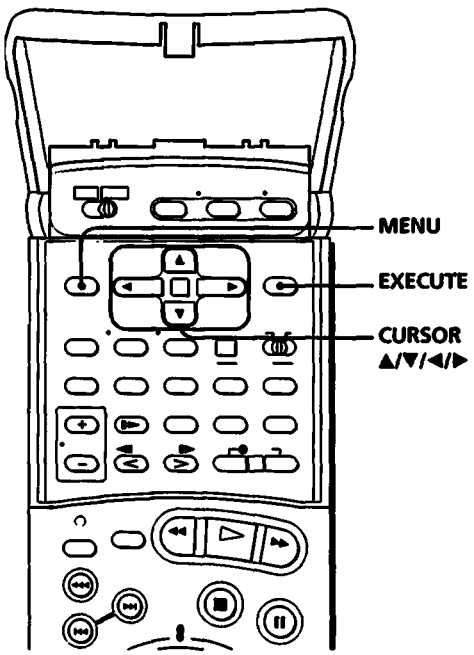
3 **Press CURSOR ▲/▼ to move the cursor (▶) to FINE TUNING.**
The fine tuning meter appears.

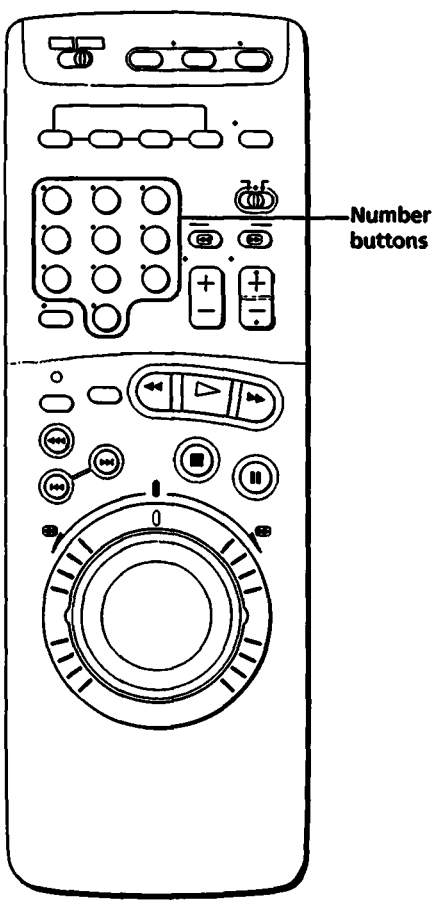


4 **Press CURSOR ◀/▶ to get a clearer picture, then press EXECUTE.**
Note that the AFT setting switches to OFF.



Setting up cable box control





Your VCR includes a cable box control feature which allows the VCR to control most brands of cable boxes via the cable mouse. With cable box control, the VCR controls channels on the cable box for timer recording. You can also use the VCR's remote commander to change channels on the cable box whenever the cable box is turned on. To use cable box control, you need to connect the cable mouse (page **11**) and set the code number and output channel.

This VCR is programmed with codes necessary to control channel selection on most brands of cable boxes at the time this VCR was manufactured. It is possible that new cable boxes may be introduced that cannot be controlled with this VCR's cable mouse. If you have a cable box that is incompatible with this VCR, contact your cable operator — they may be able to provide you with a compatible cable box.

1 **Press MENU.**
The main MENU appears on the TV screen.

```
MENU                    PAGE 1
▶TIMER SET/CHECK
  SET UP MENU
  TUNER PRESET
  SET VCR Plus+ CHANNELS
  CABLE BOX CONTROL
  CLOCK SET

Use ▲ ▼ to select an
item, then push EXECUTE
```

2 **Press CURSOR ▲/▼ to move the cursor (▶) to CABLE BOX CONTROL, then press EXECUTE.**
The CABLE BOX CONTROL menu appears.

```
CABLE BOX CONTROL

  ●ON      OFF

Use ◀ ▶ to select
Push EXECUTE for first
time setup
Push MENU to quit
```

3 **Press CURSOR ◀/▶ to select ON, then press EXECUTE.**

4 **Enter the cable box code number by pressing the number buttons, then press EXECUTE.**
Find your cable box code number from the chart on page **28**.

```
Your CABLE BOX Code No.
        --

Enter your CABLE BOX
Code No using 0-9 keys
Refer to the Operating
Manual for the Code
Then push EXECUTE
```

5 **Select the cable box output channel using CURSOR ▲/▼, then press EXECUTE.**

```
Your CABLE BOX Output CH

  CH2
●CH3
  CH4
  LINE(LINE IN 1 on VCR)

Use ▲ ▼ to select CABLE
BOX CH Then push EXECUTE
```

Setting up cable box control (continued)

Note

- When CABLE BOX CONTROL is set to ON, you can change the input source by pressing INPUT SELECT. However, you cannot change the preset tuner channels.

Compatible cable boxes and their code numbers

Cable box brand	Code number Primary use	Code number Secondary use
Drake		38
Eastern		20
Gemini		28
Hamlin/Regal	14, 15, 43	16
Jerrold/GI	1, 2, 3, 4	10, 11, 30, 31, 32
Macom		26, 37
Magnavox		36
Oak	17, 18	19
Panasonic	12, 13	
Philips	22	21, 23, 24
Pioneer	8, 9	
RCA		25
Regency	20	
Scientific Atlanta	5, 6	
Texscan		27
Tocom	10, 11	
Toshiba		35
Unika		41
United Cable		3
United Satellite		42
Video Tech		39
Videoway		40
Viewstar		22, 23
Zenith	7	33, 34

The VCR contains 43 cable box code numbers (1 to 43). If your cable box is not listed above, you may try one of the other codes.

To check the cable box control setting

1. Press CH +/– on the remote commander. Does the channel indicator on the cable box change? (Point the remote commander at the VCR, not at the cable box.)
2. Press all 10 number buttons (0 to 9) on the remote commander. Does the channel indicator on the cable box change?

If the answer to both **1** and **2** is "yes," you have made the correct setting.

If you cannot get your VCR to control the cable box

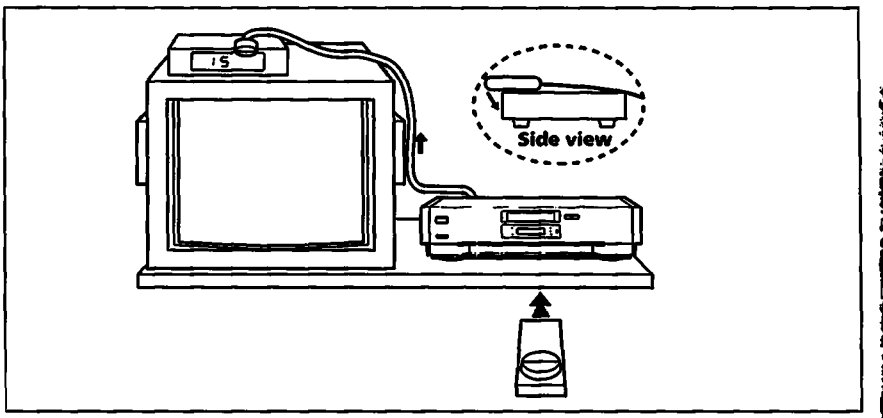
✓ Check the position of the cable mouse.

✓ Place the cable box and VCR away from each other. Do not place the cable box on top of the VCR.

✓ Try the setup again making sure to use the correct control code. If the cable box still does not respond you can try other codes.

If your cable box still does not operate with the cable mouse, contact your cable company to see if they can provide you with a compatible cable box.

Tips for normal viewing

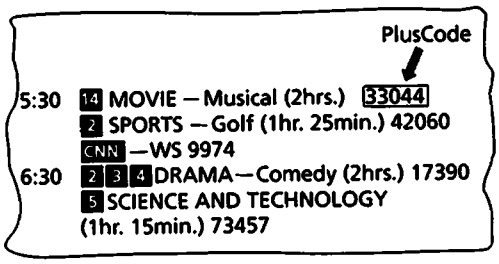


- Place the cable mouse so that it hangs out over the cable box front.
- Point the remote commander at the VCR, not at the cable box.

Setting up VCR Plus+

VCR Plus+ is a feature in Sony VCRs that simplifies the task of programming the VCR to make timer recordings.

Example of "PlusCode"


PlusCode
5:30 14 MOVIE – Musical (2hrs.) 33044
2 SPORTS – Golf (1hr. 25min.) 42060
CNN –WS 9974
6:30 2 3 4 DRAMA–Comedy (2hrs.) 17390
5 SCIENCE AND TECHNOLOGY
(1hr. 15min.) 73457

Example of "Channel Line-up Chart"

CABLE TV	Guide channel number
A&E Arts & Entertainment Network	39
AMC American Movie Classics	35
BRV Bravo (program grid only)	54
CNN Cable News Network	42
CSP C-SPAN	28
DIS The Disney Channel	53
DSC The Discovery Channel	37
ESN ESPN	34
FAM The Family Channel	47
HBO Home Box Office	33
LIF Lifetime	46
MAX Cinemax	45
MSG Madison Square Gardens Network	19
MTV Music Television	48
NIK Nickelodeon	38
SC Sports Channel	59
SCA Sports Channel America	70
SHO Showtime	41
TBS TBS SuperStation	43
TMC The Movie Channel	58
TNN The Nashville Network	49
TNT Turner Network Television	52
USA USA Network	44

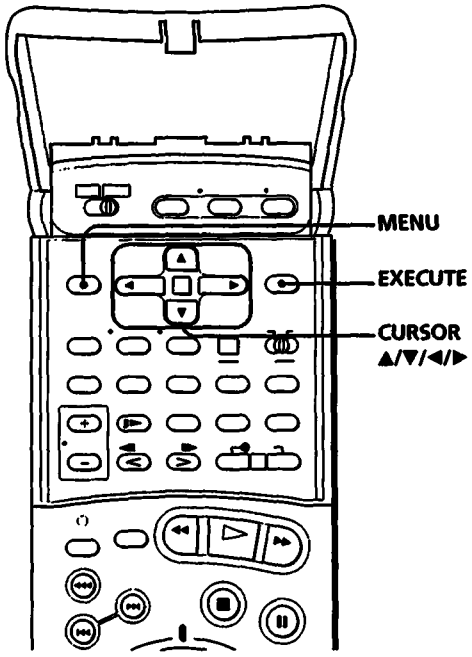
How VCR Plus+ works

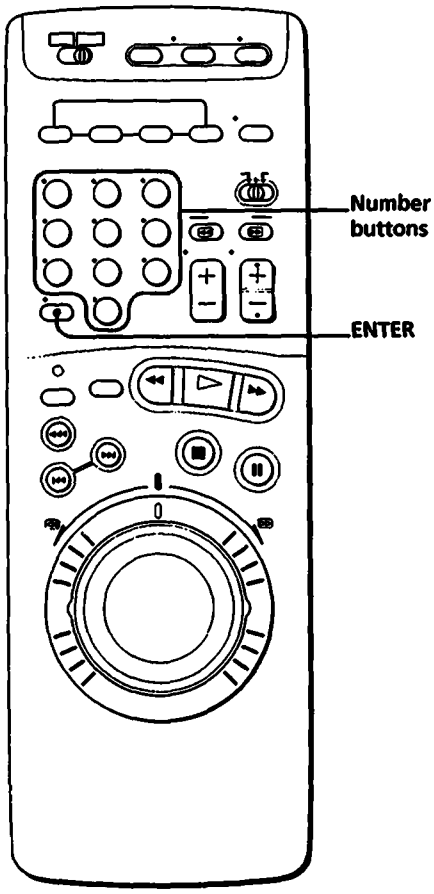
Whenever you want to record a TV program, all you need to do is look up the program's "PlusCode," a number assigned to each program that's published in the TV section of most newspapers, cable TV listings, and even *TV GUIDE* magazine. Then, just enter the PlusCode of the program you want and the VCR is automatically programmed to record that show. It's that simple. With VCR Plus+, you no longer have to go through a lengthy and often repetitive procedure when you set start and stop times, channel numbers, and dates. All this information is automatically sent to your VCR when you enter the program's PlusCode.

How to set up your VCR

Setting up your VCR involves coordinating the TV channel number (the number you turn to on your TV or VCR to watch a program) with the guide channel (the number that's assigned to that channel in your program guide). To get the guide channel numbers, find the "Channel Line-up Chart" in the program guide for your area that features VCR PlusCodes. It usually looks like the example to the left.

For each channel your VCR receives, use the Channel Line-up Chart to check that the channel numbers match. For example, if HBO is listed in the Channel Line-up Chart on channel 33, and your VCR receives HBO on channel 15, you need to coordinate these numbers using the following procedure. For channels in which the numbers are the same (for example, if your VCR receives HBO on channel 33, and the guide channel number is 33), you can skip this procedure.





1 **Press MENU.**
The main MENU appears on the TV screen.

```
MENU                          PAGE1
▶TIMER SET/CHECK
 SET UP MENU
 TUNER PRESET
 SET VCR Plus+ CHANNELS
 CABLE BOX CONTROL
 CLOCK SET

Use ▲ ▼ to select an
item, then push EXECUTE
```

2 **Press CURSOR ▲/▼ to move the cursor (▶) to SET VCR Plus+ CHANNELS, then press EXECUTE.**
The SET VCR Plus+ CHANNELS menu appears and the GUIDE CH column is highlighted.

```
SET VCR Plus+ CHANNELS

  GUIDE CH    TV CH
     --   -    --

Push 0-9 keys to set
program GUIDE CH

Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

3 **Enter the channel number assigned in the program guide and press ENTER.**
The TV CH column is highlighted.

```
SET VCR Plus+ CHANNELS

  GUIDE CH    TV CH
     3   -     3

Push 0-9 keys to set
your TV CH

Then push ENTER
```

4
- **If you made Hookup 1, 2, or 3, enter the actual number on your TV (and VCR) and press ENTER.**
- **If you made Hookup 4, enter the cable box output channel (usually 2, 3, or 4) and press ENTER.**
- **If you have made Hookup 5, enter the actual number on your TV (and VCR) for an unscrambled channel and press ENTER. For a scrambled channel, enter the cable box output channel and press ENTER.**

```
SET VCR Plus+ CHANNELS

  GUIDE CH    TV CH
     3   -     7

Push 0-9 keys to set
your TV CH

Then push ENTER
```

```
SET VCR Plus+ CHANNELS

  GUIDE CH    TV CH
     25  -     75

Push 0-9 keys to set
program GUIDE CH

Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

5 **Repeat steps 3 and 4 for each channel whose numbers don't match.**

6 **When you have set all channels, press EXECUTE to confirm your channel settings.**

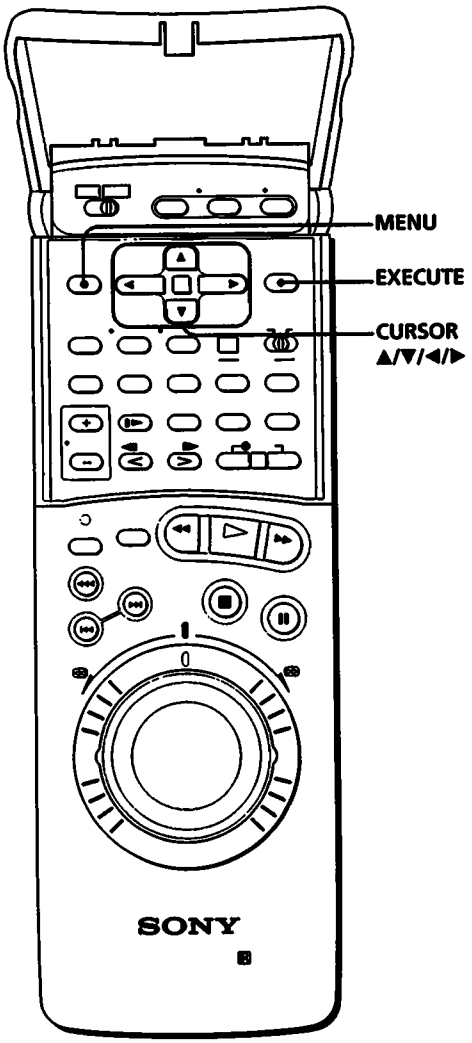
```
VCR Plus+ CHANNEL LIST

 GUIDE  TV     GUIDE  TV
   3  -  7       --  -  --
  --  -  --      --  -  --
  --  -  --      --  -  --
  --  -  --      --  -  --
  --  -  --      --  -  --

Push MENU to quit
```

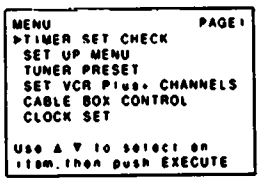
7 **When you've finished, press MENU to exit.**

Using the SET UP menu

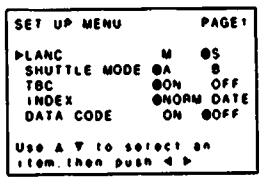


The SET UP menu allows you to make a number of optional setup choices. For a list of menu choices, see the following page.

1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press CURSOR ▲/▼ to move the cursor (▶) to SET UP MENU, then press EXECUTE.**
The SET UP MENU appears on the TV screen.



3 **Press CURSOR ▲/▼ to move the cursor (▶) to the desired menu choice.**

4 **Set the item to the desired setting using CURSOR ◀/▶.**

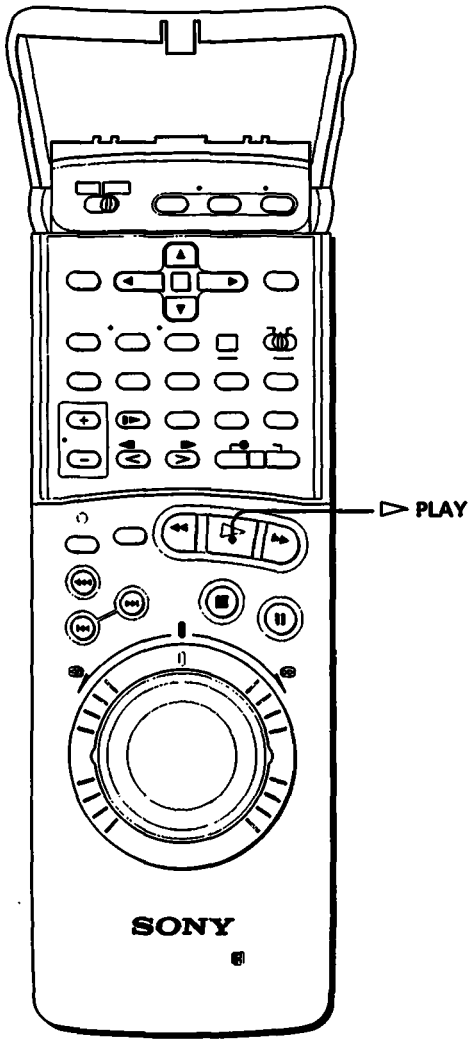
5 **Press EXECUTE to return to the original screen.**

Menu choices

Initial settings are indicated in bold letters.

Menu option	Set this option to
LANC	• M to control another VCR with this VCR using the LANC connector. • **S** to control this VCR with another VCR.
SHUTTLE MODE	• **A** to use this remote commander with a VCR that doesn't have a JOG/SHUTTLE function. • B to use this remote commander with a VCR that has a JOG/SHUTTLE function.
TBC	• **ON** to correct any slight shaking or vibration. Generally, use this setting. • OFF to leave any shaking or vibration uncorrected.
INDEX	• **NORM** to search for index signals in numerical order. • DATE to search for index signals by date.
DATA CODE	• ON to have the day, month, year, entered on the tape. (Use if your video camera has this function.) • **OFF** to not have the day, month, year, entered on the tape.
Hi-8	• **AUTO** when you want to record a **Hi8** tape in the **Hi8** format. • OFF when you want to record a **Hi8** tape in the standard 8 mm format.
AUTO ANT SEL	• **ON** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the channel for video playback (channel 3 or 4). • OFF if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
AUTO STEREO	• **ON** to receive stereo programs. • OFF to reduce noise in a stereo program. Although the sound may improve, the sound becomes monaural.
L IN 1 VIDEO	• **NORM** if you have connected the video output jack of the other VCR to the LINE IN 1 VIDEO. • S if you have connected the S VIDEO output connector of the other VCR to the LINE IN 1 VIDEO connector of this VCR.
SAP	• **AUTO** to record SAP sound on the hi-fi (standard) track and the main sound on the PCM track. • OFF to record both the main sound and the SAP sound on the hi-fi (standard) track.

Playing a tape



Tip

- For further information on searching and playback functions, see "Playing/ searching at various speeds" on page **48.**

This section shows you how to play back a video tape.

1 **Turn on your TV and tune in to the VCR:**

- If the TV is connected to the VCR using the S-video cable or an audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna, set the TV to the program position for the VCR.

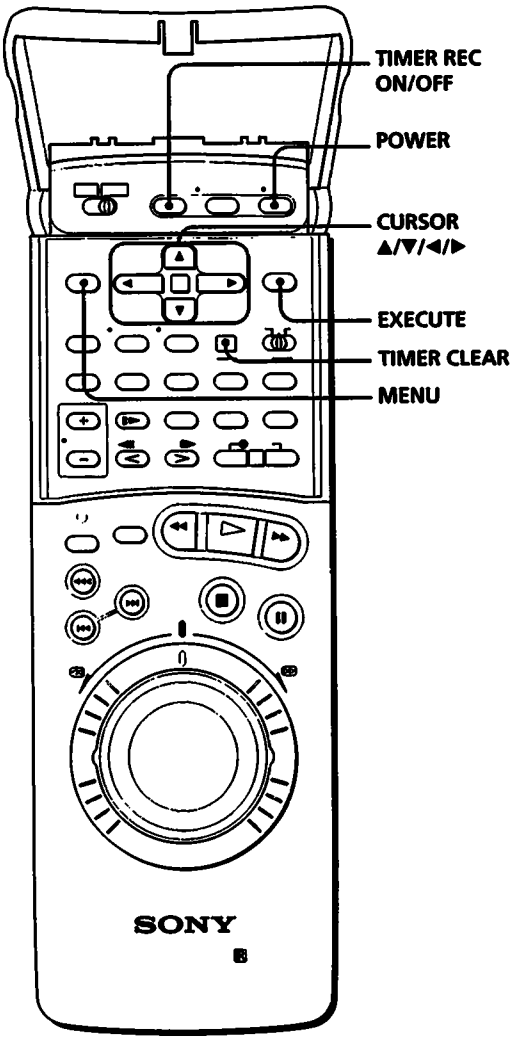
2 **Insert a tape.**
The VCR turns on automatically.

3 **Press ▷ PLAY to start playing.**
When the tape reaches the end, the VCR automatically rewinds it to the beginning. (The power remains on.)

Additional tasks

To	Press
Stop play	■ STOP
Pause play	❚❚ PAUSE
Resume play after pause	❚❚ PAUSE or ▷ PLAY
Search forward	Press the JOG/SHUTTLE button, then turn the JOG dial/SHUTTLE ring to ⊕ during playback
Search backward	Press the JOG/SHUTTLE button, then turn the JOG dial/SHUTTLE ring to ⊖ during playback
Fast-forward the tape	▶▶ FF during stop
Rewind the tape	◀◀ REW during stop
Rewind the tape at high speed	◀◀◀ HI-SPEED REW

Checking/cancelling timer settings



This section shows you how to check and cancel the timer settings after you've stored them in the VCR.

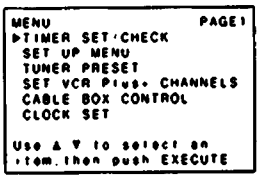
Before you start...

- Turn on your TV and tune in to the VCR.

1 **Press TIMER REC ON/OFF to turn off the TIMER indicator on the VCR.**

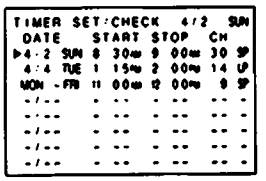
2 **Press POWER to turn on the VCR.**

3 **Press MENU and select TIMER SET/CHECK, then press EXECUTE.**

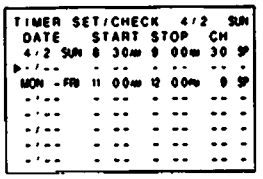


4 **Check the timer settings:**

- If you do not want to cancel the settings, press EXECUTE, then TIMER REC ON/OFF to return to recording standby.
- If you want to cancel the settings, press CURSOR ▲/▼ to move the cursor (▶) to the setting you want to cancel.



5 **Cancel the timer setting:**
Press TIMER CLEAR, then EXECUTE. The VCR returns to the original screen. If there are any other timer settings left, press TIMER REC ON/OFF to return to recording standby.



To check the timer settings during timer recording
Press MENU and select TIMER SET/CHECK. After checking, press EXECUTE to turn off the display.

Selecting the audio recording pattern

Select the desired track to play back by setting the AUDIO MONITOR switch on the VCR.

To listen to	Set the AUDIO MONITOR switch to
Digital stereo signals recorded on the PCM track	PCM
Mixed sound of the PCM track and the standard track	MIX
Hi-fi stereo sound recorded on the standard track	STD (Hi-Fi)
Additionally dubbed sound	PCM
Additionally dubbed sound and the original sound on the standard track	MIX

Notes

- Normally set the AUDIO MONITOR switch to PCM to enjoy high-quality playback sound.
- The additionally dubbed sound can't be heard if the AUDIO MONITOR switch is set to STD (Hi-Fi).

If the sound is not heard or is heard only intermittently

When a tape which has been recorded on a video camera recorder or a video cassette recorder without the PCM function is played on this unit, set the AUDIO MONITOR setting to STD. The PCM indicator may blink, but it will not affect the sound.

When the TV/VCR connection is made to a TV without audio/video inputs

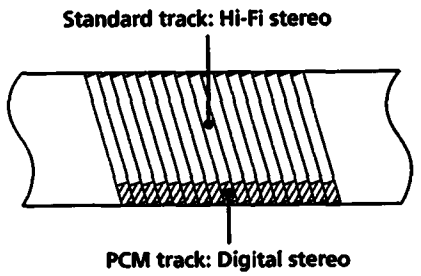
To monitor the playback sound in stereo, connect the VCR to a stereo system.

To listen to the sound on both the PCM and the standard track

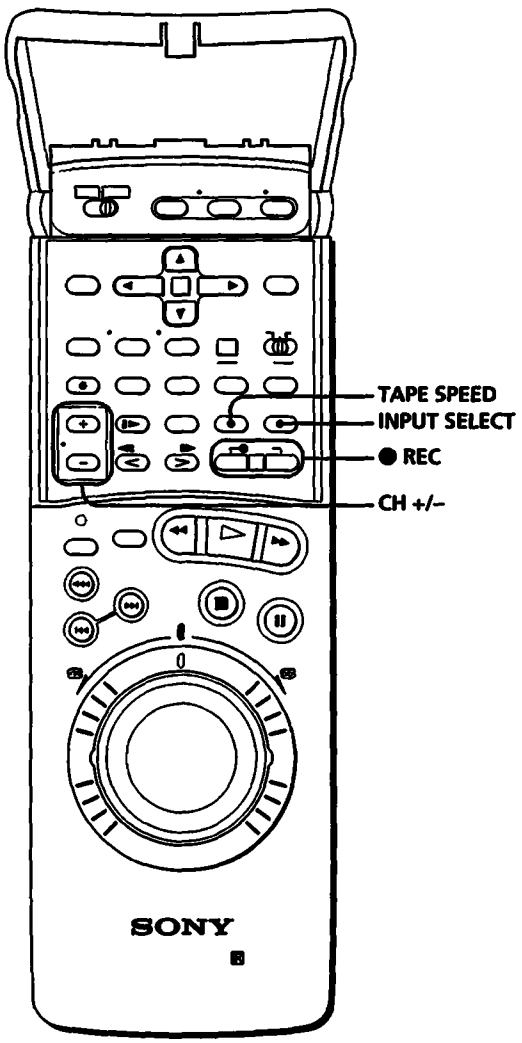
Set the AUDIO MONITOR switch on the operation panel to MIX. If the sound is hard to distinguish, use the STD AUDIO LEVEL to adjust the standard sound level. You cannot adjust the PCM sound level.

How sound is recorded on a video tape

This VCR records sound onto two different tracks. High-fidelity sound (usually stereo) is recorded onto the standard (AFM) track along with the picture. PCM (digital sound) is recorded onto the PCM track along the edge of the tape.



Recording TV programs



Tip

- To select channels, you can also use the number buttons on the remote commander. Enter the desired channel number using the number buttons, then press ENTER.

This section shows you how to record TV programs in the most basic way: manual recording. With manual recording, you start the VCR recording when the program begins, then stop it when the program ends. The VCR also provides the following ways of recording:

- Manually start recording, then stop it automatically—"Recording using the quick timer" (page **38**)
- Automatically start and stop recording—"Recording TV programs using the timer" (page **41**)
- Automatically start and stop recording just by entering the "Plus Code"—"Recording TV programs using VCR Plus+" (page **44**)

1 **Turn on your TV and tune in to the VCR:**

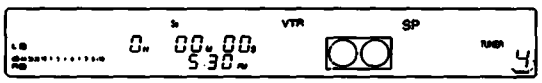
- If the TV is connected to the VCR using the S-video cable or an audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna, set the TV to the channel for the VCR.

When using a cable box, turn it on.

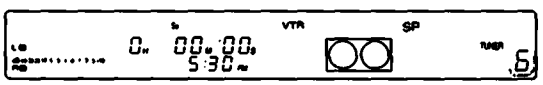
2 **On the operation panel, set the PCM REC LEVEL control to "5" and the PCM REC BALANCE control to the center.**

3 **Insert a tape with the safety tab slid back so that the red portion does not show.**

4 **Press INPUT SELECT until a channel number appears in the VCR's display window.**

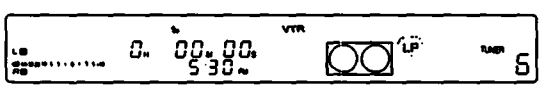


5 **Select the desired channel by pressing CH +/–.**



6 **Select the tape speed, SP (standard play) or LP (long play), by pressing TAPE SPEED.**

See "To select tape speeds" on the next page.



7 **Start recording by pressing ● REC.**

When the tape reaches the end, the VCR automatically rewinds it to the beginning.

Recording TV programs (continued)

Note

- If you insert a cassette with its safety tab slid to show the red portion, the VCR ejects it when you press ● REC.

Tips

- To cut out an unwanted scene while recording, press ❚❚ PAUSE, turn the JOG dial/SHUTTLE ring on the VCR to rewind the tape to the beginning of the unwanted scene, then press ❚❚ PAUSE to resume recording.
- The display appears on the TV screen indicating information about the tape, but the information will not be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Notes

- If your tape ends during quick-timer recording, recording stops and the VCR turns off. The tape does not rewind automatically.
- If a power interruption occurs during quick-timer recording, recording stops and your VCR turns off. If the interruption lasts less than one hour and the power is restored before the recording end time, recording will start again from that point.

To stop recording

Press ■ STOP.

To select tape speeds

When recording, select either SP or LP. LP provides recording time twice as long as SP. However, SP provides better picture quality. You can mix SP and LP on the same tape. When playing back, the VCR automatically detects the tape speed. See the table below for the maximum recording/playback time in each speed.

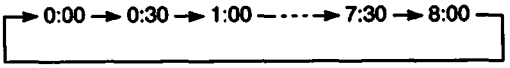
Tape type	Maximum recording/playback time	
	SP	LP
E6/P6-30	30 min.	1 hr.
E6/P6-60	1 hr.	2 hrs.
E6/P6-90	1 hr. 30 min.	3 hrs.
E6/P6-120	2 hrs.	4 hrs.
P6-150	2 hrs. 30 min.	5 hrs.
E6-180	3 hrs.	6 hrs.

If you use other types of tapes than those listed above, the remaining tape length may not be displayed correctly.

Recording using the quick timer

The quick timer enables you to record for a specified period of time in intervals of 30 minutes. Once you specify the recording time, the VCR automatically stops recording. Before you begin, check that the clock is set correctly.

After you start recording, press QUICK TIMER on the operation panel until the desired duration appears in the display window. The TIMER indicator on the VCR lights up. Each press increases the recording duration in increments of 30 minutes as shown below.



The recording duration decreases minute by minute to 0:00, then the VCR turns off automatically.

To stop recording

To stop quick-timer recording while the VCR is recording a program, press TIMER REC ON/OFF to turn off the TIMER indicator on the VCR

To extend the recording duration while recording

Press QUICK TIMER until the desired duration appears in the display window.

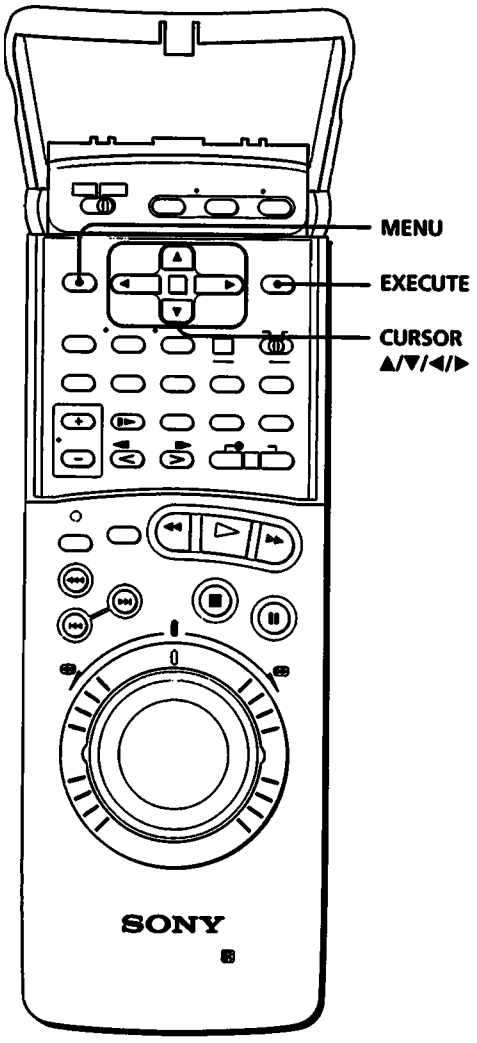
Watching a TV program while recording another

You can watch a TV program and record another at the same time.

1 Press TV/VTR on the top right of the remote commander to turn off the VTR indicator in the display window.
2 If the TV is connected to the VCR using an audio/video cable, set the TV to TV input.
If the TV is connected to the VCR using only the antenna cable, skip this step.
3 Select the desired channel on the TV.

Tip

- For information on how the VCR records sound, see "How sound is recorded on a video tape" on page **36**.



Recording stereo and SAP programs

Stereo programs

This VCR automatically records stereo programs in stereo. When stereo programs are received, the STEREO indicator appears in the display window. If noise occurs while receiving a stereo program, record the program in monaural. Follow the steps below.

SAP programs

Normally, this VCR records main sound on both the PCM and the hi-fi (standard) tracks. To record SAP (Second Audio Program) sound on the hi-fi (standard) track, follow the steps below.

1 Press MENU and select SET UP MENU.

```
SET UP MENU          PAGE1

▶LANC              M    ●S
 SHUTTLE MODE    ●A      B
 TBC             ●ON     OFF
 INDEX           ●NORM DATE
 DATA CODE        ON   ●OFF

Use ▲ ▼ to select an
item, then push ◄ ►
```

2 • To record stereo programs in monaural:
Set AUTO STEREO to OFF using CURSOR ▲/▼/◄/►.

```
SET UP MENU          PAGE2

 Hi8               ●AUTO OFF
 AUTO ANT SEL      ●ON    OFF
▶AUTO STEREO        ON   ●OFF
 L IN 1 VIDEO      ●STD    S
 SAP               ●AUTO OFF

Use ▲ ▼ to select an
item, then push ◄ ►
```

• To record SAP sound on the hi-fi (standard) track:
Set SAP to AUTO using CURSOR ▲/▼/◄/►.

```
SET UP MENU          PAGE2

 Hi8               ●AUTO OFF
 AUTO ANT SEL      ●ON    OFF
 AUTO STEREO       ●ON    OFF
 L IN 1 VIDEO      ●STD    S
▶SAP               ●AUTO OFF

Use ▲ ▼ to select an
item, then push ◄ ►
```

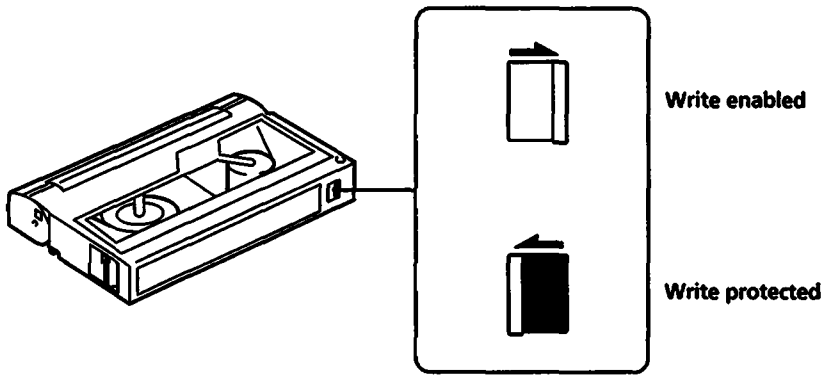
3 Press EXECUTE to store the setting.

To monitor SAP sound while recording
On the operation panel, set the AUDIO MONITOR switch to STD.

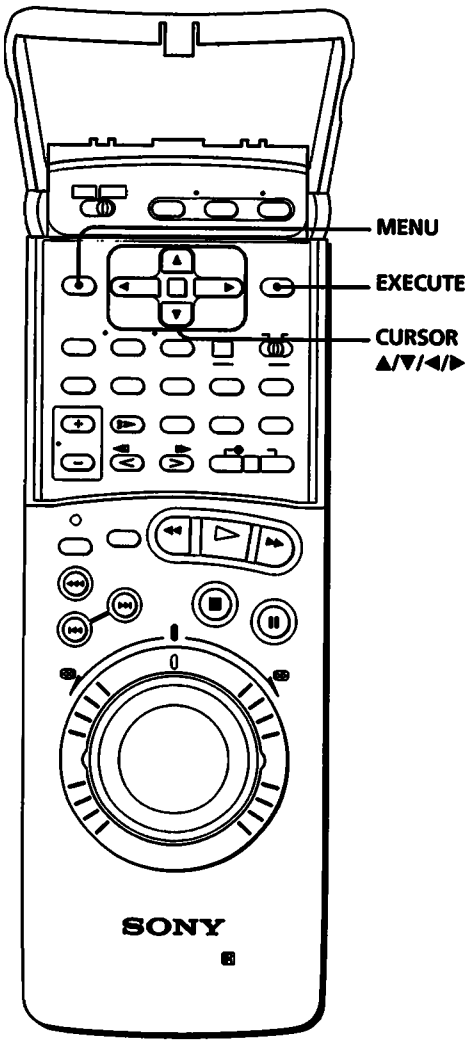
Saving a recording

Video tapes have a safety tab to protect against accidental recording. To prevent accidental erasure of a recording, slide out the tab on the cassette so that the red portion is visible. A tape with its safety tab in this position ejects if you try to record on it.

To re-record on a tape, slide the tab so that the red portion is not visible



Recording TV programs using the timer



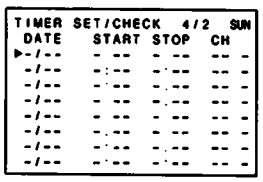
This section shows you how to let the VCR automatically start and stop recording TV programs. You can preset up to eight programs within a one month time frame. If VCR Plus+ is available in your area, see the section "Recording TV programs using VCR Plus+" on page **44** for easier timer recording.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR. When using a cable box, turn it on.

1 **Press MENU and select TIMER SET/CHECK, then press EXECUTE.**

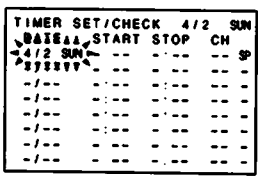
A short beep alerts you if the clock needs to be set.



2 **Set the date to start recording:**

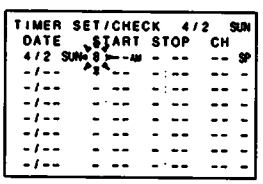
1 Press CURSOR ▶.
Make sure today's date is selected. If it isn't, reset the clock to the correct time.
2 Press CURSOR ▲ to set the month and date.
The day of the week is set automatically.

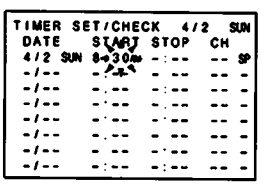
To record the same program every day or the same day once a week, see "Daily/weekly recording" on page **43**.



3 **Set the time to start recording:**

1 Press CURSOR ▶ to select the hour under "START," then press CURSOR ▲/▼ to set the hour.
2 Press CURSOR ▶ to select the minutes under "START," then press CURSOR ▲/▼ to set the minutes.





(continued)

Recording TV programs using the timer (continued)

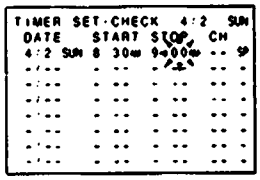
Tips

- To set the channel, you can also use the CH +/– or number buttons.
- To record video sources from LINE IN 1 or 2 jacks, press INPUT SELECT to display "LINE1" or "LINE2" in the "CH" position.
- When CABLE BOX CONTROL is set to ON, timer recording cannot be done through LINE IN.
- To set the recording tape speed, you can also use TAPE SPEED.
- To change or correct a setting before confirming it, press CURSOR ▶ to highlight the item you want to change and reset it.

Note

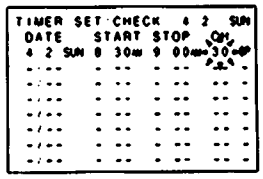
- If the ⏺ tape indicator in the VCR's display window and the TIMER indicator on the VCR flash when you press TIMER REC ON/OFF, check for one of the following causes:
  - no cassette has been inserted,
  - the tape is at its end, or
  - the safety tab on the cassette has been slid to show the red portion underneath.

4 **Press CURSOR ▶, then set the time to stop recording in the same way.**



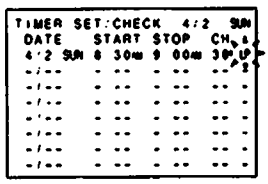
5 **Press CURSOR ▶, then press CURSOR ▲/▼ to select the channel you want to record.**

Only the channels preset in the VCR will appear even if CABLE BOX CONTROL is set to ON. When using cable box control, the cable box channels appear.



6 **Press CURSOR ▶, then press CURSOR ▲/▼ to select the tape speed, SP (standard play) or LP (long play).**

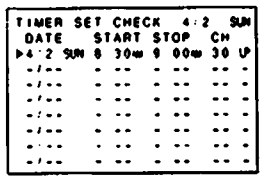
See "To select tape speeds" on page 38.



7 **To confirm your program, press CURSOR ▶.**

All the settings become deselected and the cursor (▶) appears in the leftmost column.

To preset another timer setting, move the cursor to the next line using CURSOR ▼ and repeat steps **2** to **7**.



8 **After making the desired timer settings, press EXECUTE.**

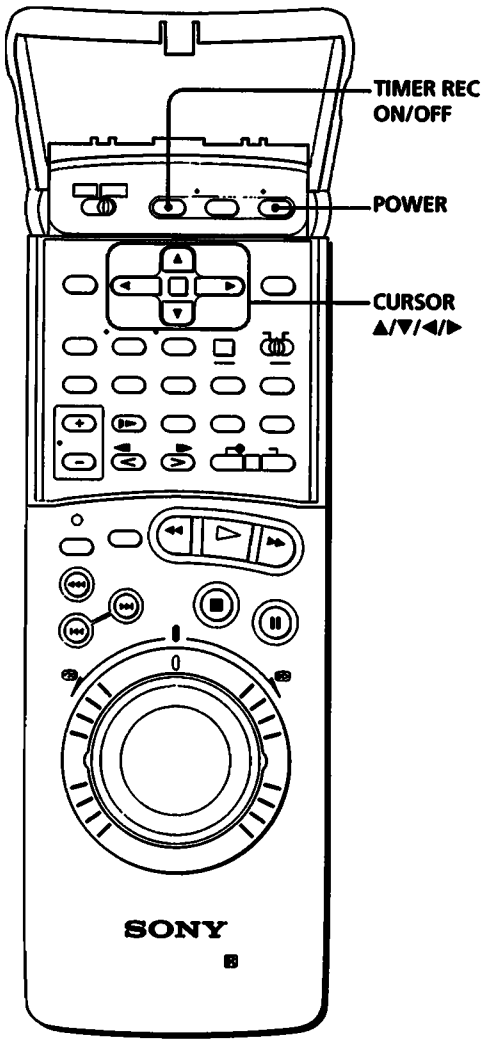
9 **Press TIMER REC ON/OFF.**

The TIMER indicator on the VCR lights up and the VCR stands by for recording. When using a cable box, leave it on.

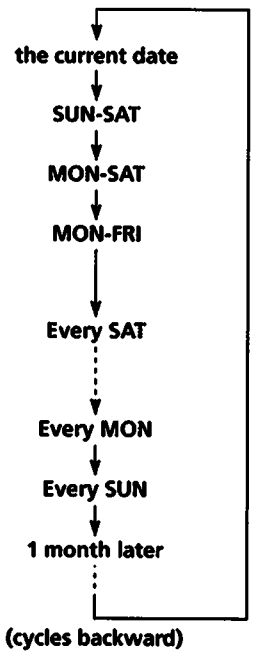
The VCR automatically turns on and starts recording at the preset start time, and turns off at the preset stop time.

To stop recording

To stop while the VCR is recording a program, press TIMER REC ON/OFF to turn off the TIMER indicator on the VCR.



Daily/weekly recording



To use the VCR while recording

You can do the following tasks during timer recording.

To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page **39**.)

Using the VCR before timer recording begins

Press TIMER REC ON/OFF to turn off the TIMER indicator on the VCR, then press POWER. The VCR is ready for use.

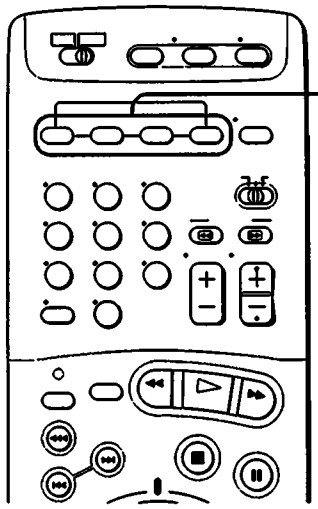
After using the VCR, press TIMER REC ON/OFF again to turn on the TIMER indicator on the VCR. When using a cable box, leave it on. Remember to reset the VCR to stand by for recording before the time you've set it to start recording, or the timer setting will be cancelled.

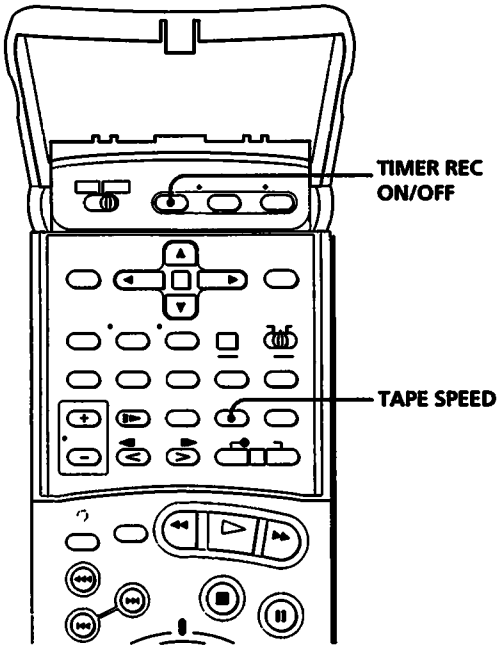
Daily/weekly recording

Daily recording records the same program every day of the week; weekly recording records the same program on the same day, every week.

When you set the date to start recording in step **2** of "Recording TV programs using the timer," press CURSOR ▼ until the desired day appears. Each time you press the button, the indication changes as shown on the left.

Recording TV programs using VCR Plus+





Tip

- If you've entered the wrong PlusCode, press TIMER CLEAR and start again from the beginning.

This section shows you another way of timer recording: recording using VCR Plus+. This allows you to record TV programs more easily. Just enter the program's "PlusCode," and the VCR will automatically record the program. You can preset up to eight programs within a one month time frame.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR. When using a cable box, turn it on.

1 **Press VCR Plus+.**
A short beep alerts you if the clock needs to be set.

```
VCR Plus+
  PlusCode      TAPE SPEED
 [--------]       [SP]
Enter program & PlusCode
using 0-9 keys
To change tape speed
push TAPE SPEED
```

2 **Enter the desired program's PlusCode using the number buttons.**
If you make a mistake, reenter the PlusCode.

```
VCR Plus+
  PlusCode      TAPE SPEED
 [12345---]       [SP]
After entering PlusCode
push ONCE  DAILY
or WEEKLY
If you make a mistake
push CLEAR
```

3 **Select the tape speed, SP (standard play) or LP (long play), by pressing TAPE SPEED.**

```
VCR Plus+
  PlusCode      TAPE SPEED
 [12345---]       [LP]
After entering PlusCode
push ONCE  DAILY
or WEEKLY
If you make a mistake
push CLEAR
```

4 **Press ONCE, DAILY or WEEKLY according to the following:**

To record the program	Press
Only once	ONCE
Monday to Friday at the same scheduled time	DAILY
Every week at the same scheduled time	WEEKLY

The recording information appears on the TV screen: date, program start and stop times, channel number and tape speed. Check that the information is correct. If it is not, press TIMER CLEAR to cancel.
To preset another timer setting, repeat steps **1** to **4**.

```
VCR Plus+
  PlusCode      TAPE SPEED
 [12345---]       [LP]
    RECORDING TIME
DATE   START STOP  CH
M/16 11 00 1 00 13
To set timer push TIMER
Rec  To erase push CLEAR
```

5 **Press TIMER REC ON/OFF to turn the VCR off.**

The TIMER indicator on the VCR lights up and the VCR stands by for recording. When using a cable box, leave it on. The VCR automatically turns on, records the program and turns off.

Notes

- If the tape indicator in the VCR's display window and the TIMER indicator on the VCR flash when the VCR turns off, check for one of the following causes:
  - no tape has been inserted,
  - the tape is at its end, or
  - the safety tab on the cassette has been slid to show the red portion underneath.

To stop recording

To stop while the VCR is recording a program, press TIMER REC ON/OFF to turn off the TIMER indicator on the VCR.

To use the VCR while recording

You can do the following tasks while recording using VCR Plus+.

To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page 39.)

Notes

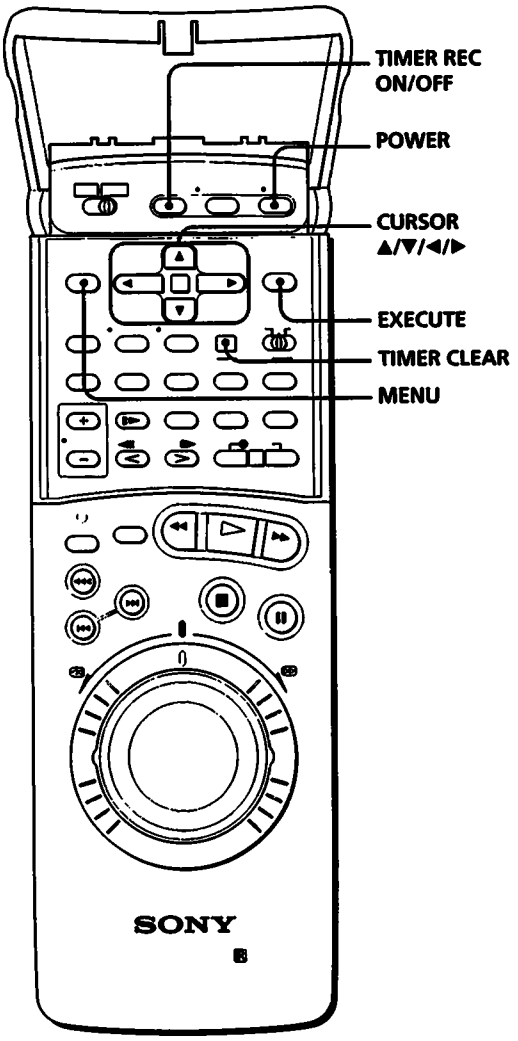
- You cannot set VCR Plus+ in the following cases:
  - When the VCR is turned off.
  - While recording using the timer or quick timer.
- The timer will not accept settings in the following cases:
  - When you select DAILY for a Saturday and Sunday program.
  - When you select DAILY or WEEKLY for a program more than seven days ahead.
  - When you enter the PlusCode of a program that has already ended.

Using the VCR before recording begins

Press TIMER REC ON/OFF to turn off the TIMER indicator on the VCR, then press POWER. The VCR is ready for use.

After using the VCR, press TIMER REC ON/OFF again to turn on the TIMER indicator on the VCR. When using a cable box, leave it on. Remember to reset the VCR to stand by for recording before the time you've set it to start recording, or the timer setting will be cancelled.

Checking/cancelling timer settings



This section shows you how to check and cancel the timer settings after you've stored them in the VCR.

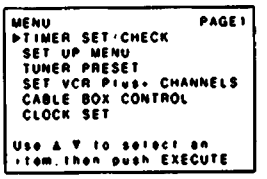
Before you start...

- Turn on your TV and tune in to the VCR.

1 **Press TIMER REC ON/OFF to turn off the TIMER indicator on the VCR.**

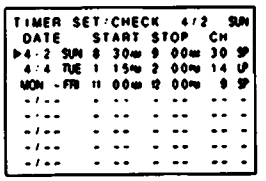
2 **Press POWER to turn on the VCR.**

3 **Press MENU and select TIMER SET/CHECK, then press EXECUTE.**

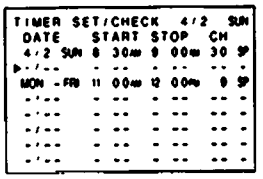


4 **Check the timer settings:**

- If you do not want to cancel the settings, press EXECUTE, then TIMER REC ON/OFF to return to recording standby.
- If you want to cancel the settings, press CURSOR ▲/▼ to move the cursor (▶) to the setting you want to cancel.



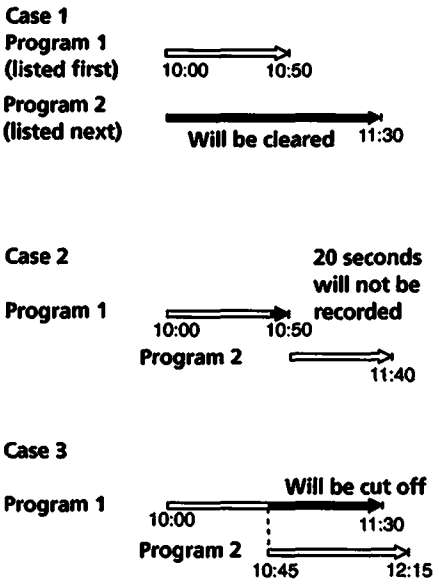
5 **Cancel the timer setting:**
Press TIMER CLEAR, then EXECUTE. The VCR returns to the original screen. If there are any other timer settings left, press TIMER REC ON/OFF to return to recording standby.



To check the timer settings during timer recording
Press MENU and select TIMER SET/CHECK. After checking, press EXECUTE to turn off the display.

When the timer settings overlap

The VCR will not record overlapping programs. If any of your timer settings overlap, change the settings.



Case 1: If you preset two programs to start recording at the same time...

The program listed first in the TIMER SET/CHECK menu has priority over the other programs. The timer settings of lower priority programs will be erased from the TIMER SET/CHECK menu when the first program begins recording.

Case 2: If you preset program 2 to start recording at the same time you preset program 1 to finish recording...

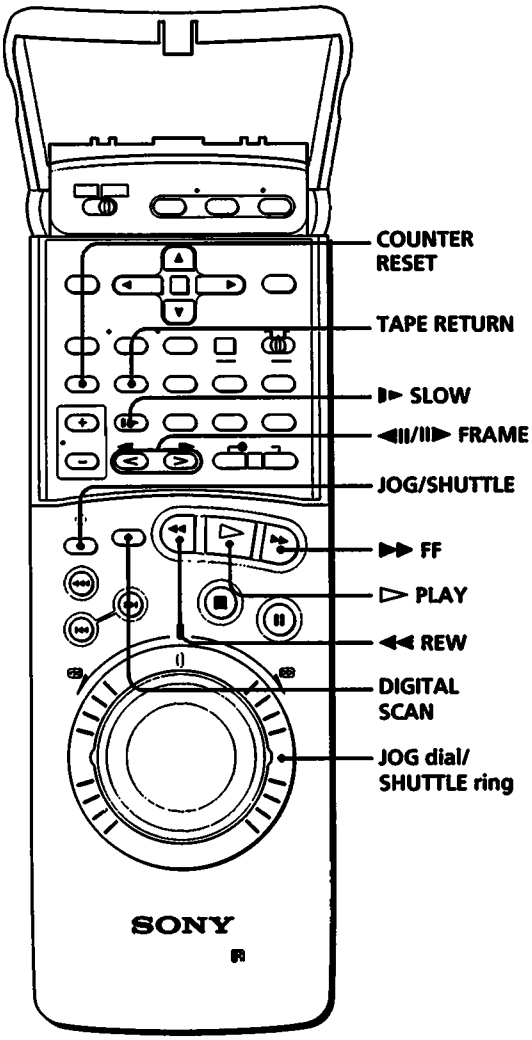
The last 20 seconds of program 1 will not be recorded because the VCR will enter recording pause for program 2 before program 1 is finished.

Case 3: If you preset program 2 to start recording before program 1 is finished recording...

Program 2 will start recording before program 1 has finished.

Playing/searching at various speeds

You can play back a tape at various speeds: high-speed, slow motion, frame by frame and so on. These options are also useful for searching for a specific point during playback. The sound is muted during these operations.



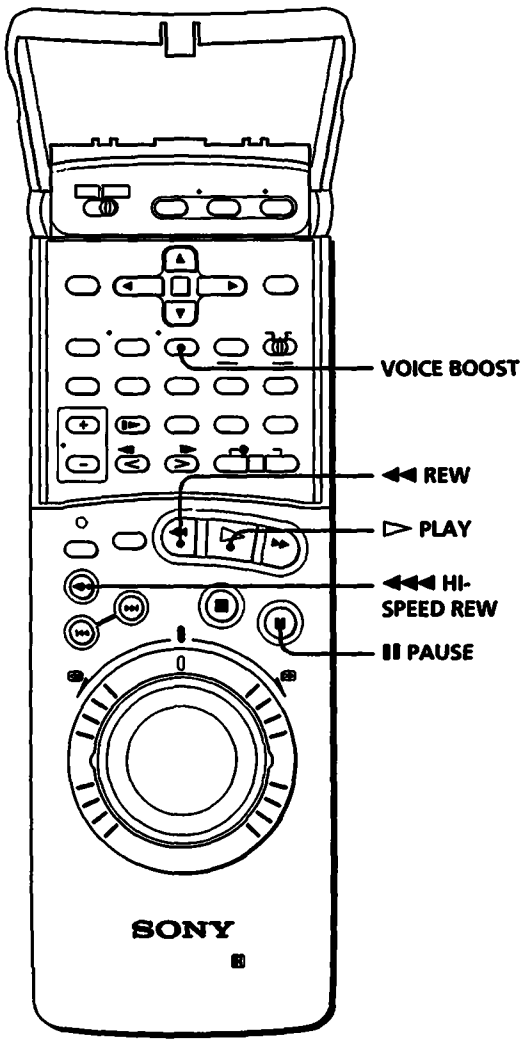
Playback options	Operation	To resume normal playback
Playing at various speeds:	During playback, press JOG/ SHUTTLE and turn the SHUTTLE ring right or left to:	Release the ring and press ▷ PLAY.
Normal speed	1	
One-fifth the normal speed	1/5	
Twice the normal speed	X2	
High speed	⏩ or ⏪	
Fast-forwarding/ Rewinding	During stop, press ►► FF or to ◄◄ REW and release.	Press ▷ PLAY.
Viewing the picture during fast-forward or rewind	During fast-forward, press ►► FF. During rewind, press ◄◄ REW.	Press ▷ PLAY.
Locking in a high-speed picture	During fast-forward or rewind, press DIGITAL SCAN. To change direction, press ►► FF (forward) or ◄◄ REW (backward).	Press ▷ PLAY.
Locking in a slow-motion picture	During playback or pause, press I► SLOW. To change direction, press ◄II FRAME (backward) or II► FRAME (forward).	Press ▷ PLAY.
Playing frame by frame	During pause, press II► FRAME to advance the picture one frame or ◄II FRAME to reverse the picture one frame.	Press ▷ PLAY.
Playing in reverse	During playback, press ◄II FRAME.	Press ▷ PLAY.
Replaying a scene	During playback, first press COUNTER RESET when you come to a scene you want to replay later. When you are ready to replay the scene, press ■ STOP. Then press TAPE RETURN and ▷ PLAY in quick succession.	——

Tip

- You can improve picture quality during playback at various speeds. See "Adjusting the tracking" on page **52**.

Note

- When you are displaying the TIME CODE or remaining tape lengh on the counter display, you can't use the TAPE RETURN button.



Playback options	Operation	To resume normal playback
Rewinding at high speed	Press ◀◀◀ HI-SPEED REW.	Press ▷ PLAY.
Rewind and restart play automatically	During stop, press ▷ PLAY on the VCR while pressing down ◀◀ REW or ◀◀◀ HI-SPEED REW on the VCR. The AUTO indicator appears in the display window.	—

Listening more easily to conversation recorded with a video camera

When you play a tape recorded with a video camera, you can reduce external noises (such as wind and traffic sounds), and amplify the human voice portion of the audio by using the VOICE BOOST function.

1 Press VOICE BOOST on the remote commander.
The VOICE BOOST indicator lights up on the VCR.
2 To listen to a tape in normal audio, press VOICE BOOST again to turn it off.
The VOICE BOOST indicator on the VCR goes out.

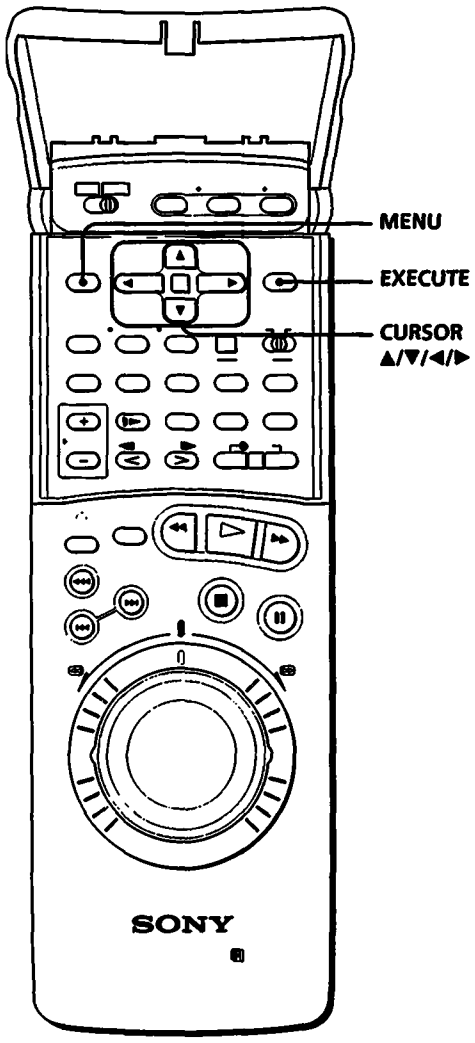
Note

- When rewinding at high speed, you will not see the time counter. After the tape is rewound to the beginning, the time counter displays "00H00M00S."

Notes

- If you use VOICE BOOST on any tapes other than those recorded on a video camera, the audio portion of the tape will be difficult to hear.
- The VOICE BOOST function operates in standard hi-fi sound, and doesn't function when using PCM audio sound.

Adjusting the picture



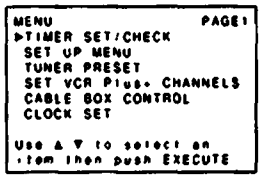
On this VCR you can adjust the hue, color, sharpness, and the Y/C delay. You can adjust the picture to suit your own viewing pleasure during regular tape playback. You can also adjust the tracking for slow-motion forward and reverse, and for two-times speed playback. (See page **52**.)

Using this menu option you can make the following picture adjustments:

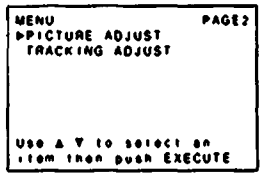
- HUE and COLOR to adjust skin color and color tone and depth etc.
- SHARPNESS to obtain a clearer more precise picture.
- Y/C DELAY to adjust color on the right or left portions of the picture.

Example of SHARPNESS adjustment

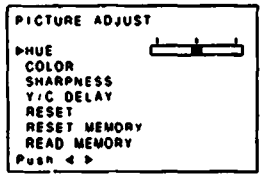
1 **Press MENU.**



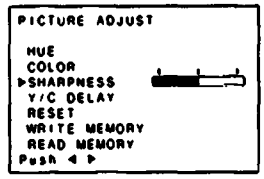
2 **Press CURSOR ▲/▼ to move the cursor (▶) to PICTURE ADJUST.**



3 **Press EXECUTE.**
The PICTURE ADJUST options appear.



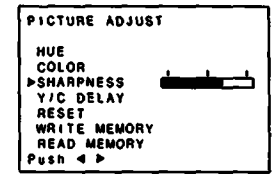
4 **Press CURSOR ▲/▼ to move the cursor (▶) to SHARPNESS.**



Note

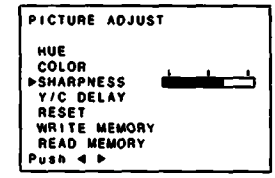
- The video signal is divided into Y (brightness element) and C (color element). The time delay gap between the transmission of these two elements is known as "Y/C delay."

5 **Press CURSOR ◀/▶ to move the tracking bar (■) to adjust the sharpness.**



6 **Press EXECUTE.**

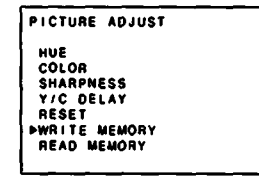
The new sharpness adjustment appears on the screen.



7 **To store your settings in memory, follows steps 1 to 3, then make your settings, then do the following:**

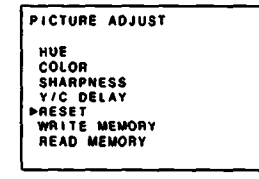
1 Press CURSOR ▲/▼ to move the cursor (▶) to WRITE MEMORY.

2 Press EXECUTE to enter the settings.



To recall your stored setting, press READ MEMORY.

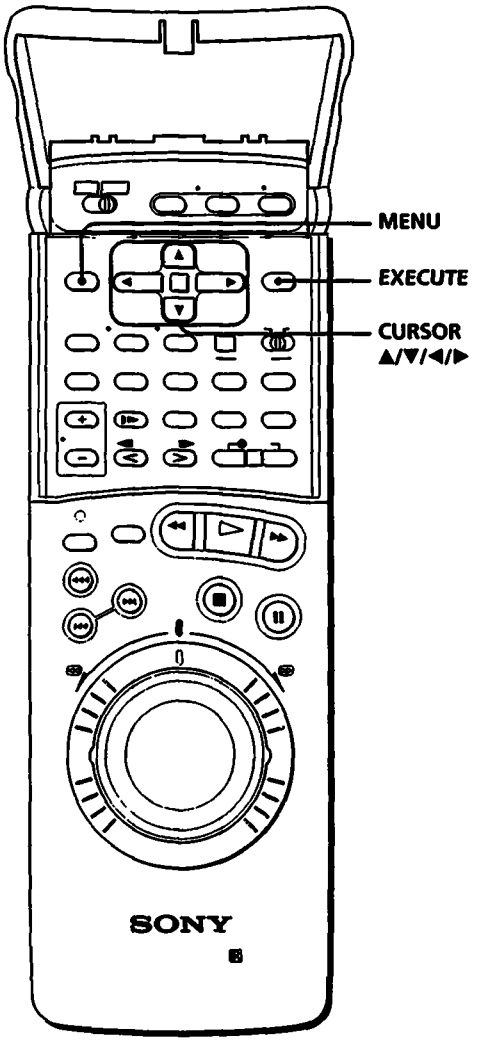
When you want to change settings, press CURSOR ▲/▼ to move the cursor (▶) to RESET, then press EXECUTE to delete the current settings. These are automatically reset to the default settings as adjusted at the factory at the time of shipment.



Notes

- When the EDIT switch is set to ON, the PICTURE ADJUST settings are automatically set to default.
- Usually the default setting are adequate unless the tape is of poor quality or recording was made on another VCR.

Adjusting the picture (continued)



Notes

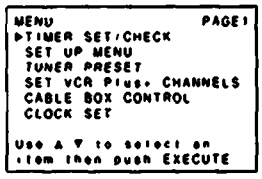
- If the picture flickers when adjusting the tracking, return the tracking bar (■) to the center position and try again.
- When viewing in reverse slow motion, even if you have adjusted the tracking, the picture might flicker and the colors might not be clear.

The VCR automatically adjusts the picture for the best possible playback or recording. If, however you find the automatic adjustment unsatisfactory, you can adjust the picture manually.

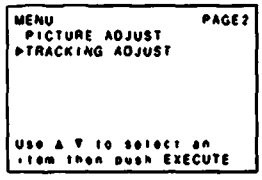
Adjusting the tracking

Though the VCR automatically adjusts the tracking when playing a tape, distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking condition during SLOW, – SLOW, or X2 playback. The tracking can only be adjusted automatically during normal playback.

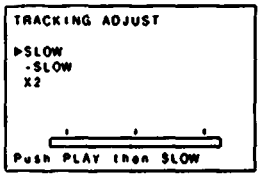
1 **Press MENU.**



2 **Press CURSOR ▲/▼/◀/▶ to move the cursor (▶) to TRACKING ADJUST.**

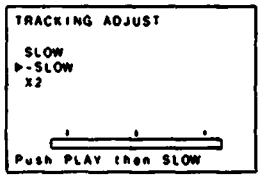


3 **Press EXECUTE.**

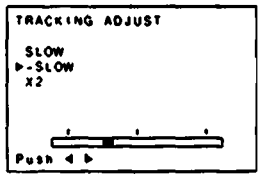


4 **Press CURSOR ▲/▼/◀/▶ to move the cursor (▶) to the tracking adjustment position you wish to select (SLOW, – SLOW, X2).**

- To adjust tracking when in forward slow motion, select SLOW.
- To adjust tracking when in reverse slow motion, select – SLOW.
- To adjust tracking when in X2 (two-times speed), select X2.



5 **Press CURSOR ▲/▼/◀/▶ to move the tracking bar (■) to adjust the tracking for the mode you are in.**



6 **Press EXECUTE.**

Reducing picture noise

When you play a tape that is in poor condition you can improve the playback quality by using the DNR (Digital Noise Reduction) function.

Notes

- When changing the DNR setting, it takes approximately 3 seconds for the new setting to show on the TV screen.
- If TBC is set to OFF in the SET UP MENU, you cannot use the DNR function.

To change DNR settings

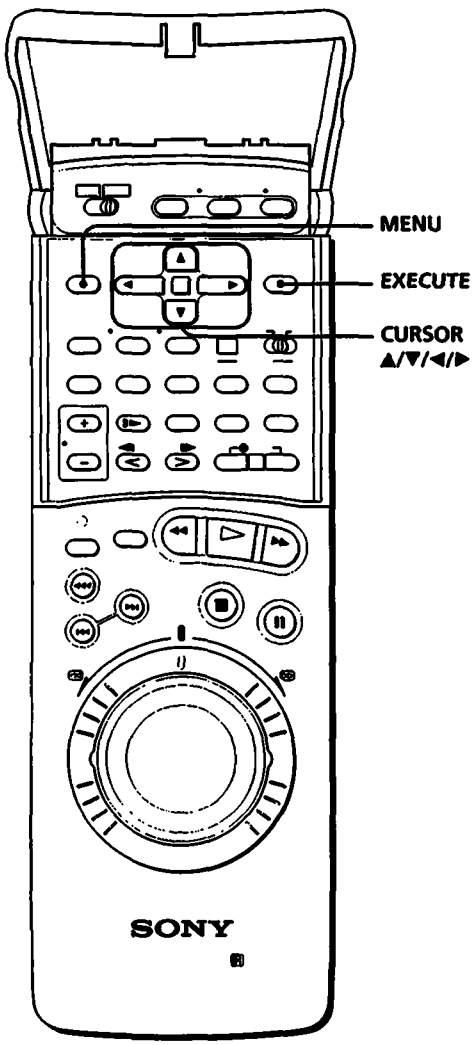
Press DNR to select the desired setting:

When	DNR level	DNR indicator in the operation panel display	The TV screen shows
In normal playback (usually at this setting)	NORMAL	Lights up	"DNR STD"
You want to reduce noise as much as possible	MAXIMUM	Lights up	"DNR MAX"
You want a clear picture outline even with the existing noise	OFF	No indication	"DNR OFF"

Searching using the index function – index search

Notes

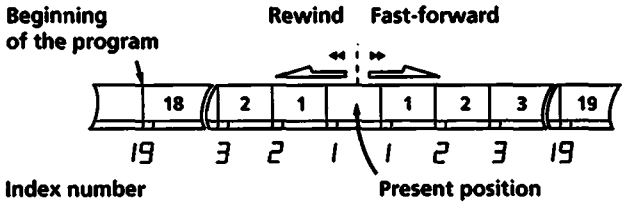
- You can't mark an index signal when you start recording from recording pause. However, while in recording pause, you can mark an index signal if the channel is changed.
- Leave an interval of at least 2 minutes for SP mode, and at least 4 minutes for LP mode, between indices so that the VCR can detect the signals correctly.
- An index signals is a 10-second preview, and the last scene of this 10-second interval remains displayed on the TV screen after the preview.



An index signal is automatically recorded at the beginning of a scene when you start recording. You can find specific scenes easily using the marks (index points). There two kinds of index searches you can make, "normal" and "date." You can use the "date" index for read only.

How the index function works

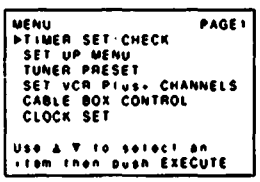
The index works as a divider between scenes, and is not numbered. So, when you specify the index mark later, you have to specify the relative position from the current position.



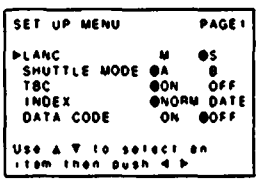
Locating an index by number – "normal" INDEX SEARCH

Locate an index by indicating how many index signals ahead or behind the scene is from the tape's current position. You can specify up to 19 index points either ahead or behind the current position. See "Using the SET UP menu" on page **32** to set the INDEX menu option.

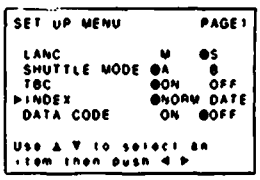
1 **Insert an indexed tape into the VCR, then press MENU.**

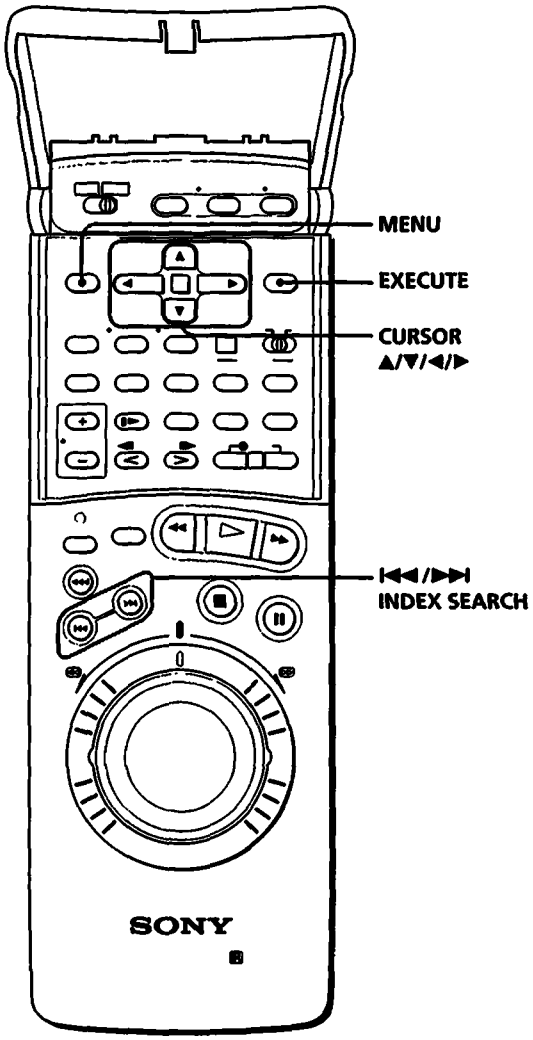


2 **Press CURSOR ▲/▼/◀/▶ to move the cursor (▶) to SET UP MENU, then press EXECUTE.**



3 **Press CURSOR ▲/▼/◀/▶ to move the cursor (▶) to INDEX, then select NORM.**





4 **Press I◀◀/▶▶I INDEX SEARCH repeatedly until the index number you want appears on the TV screen:**

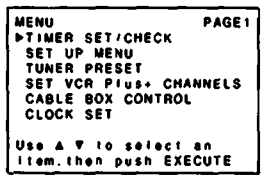
- To locate succeeding programs, press ▶▶I INDEX SEARCH.
- To locate preceding programs, press I◀◀ INDEX SEARCH.

The VCR starts searching and the index number on the TV screen counts down to zero in numerical order. Playback starts automatically from that point.

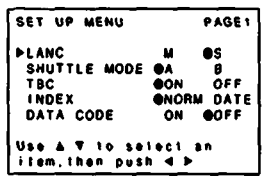
Locating an index by date – "date" INDEX SEARCH

You can locate a desired scene by date if the tape you are using was recorded on by a video camera that has a date code function. You can call up to 19 index points by searching for DATA CODE signals. See "Using the SET UP menu" on page **32** to set the INDEX menu option.

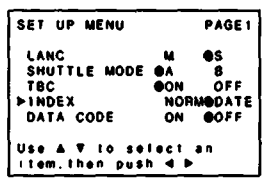
1 **Insert an indexed tape into the VCR, then press MENU.**



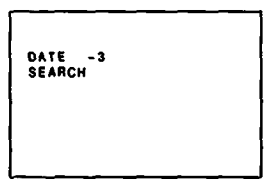
2 **Press CURSOR ▲/▼/◀/▶ to move the cursor (▶) to SET UP MENU, then press EXECUTE.**



3 **Press CURSOR ▲/▼/◀/▶ to move the cursor (▶) to INDEX, then select DATE.**



4 **Press I◀◀/▶▶I INDEX SEARCH repeatedly until the index number you want appears on the TV screen:**



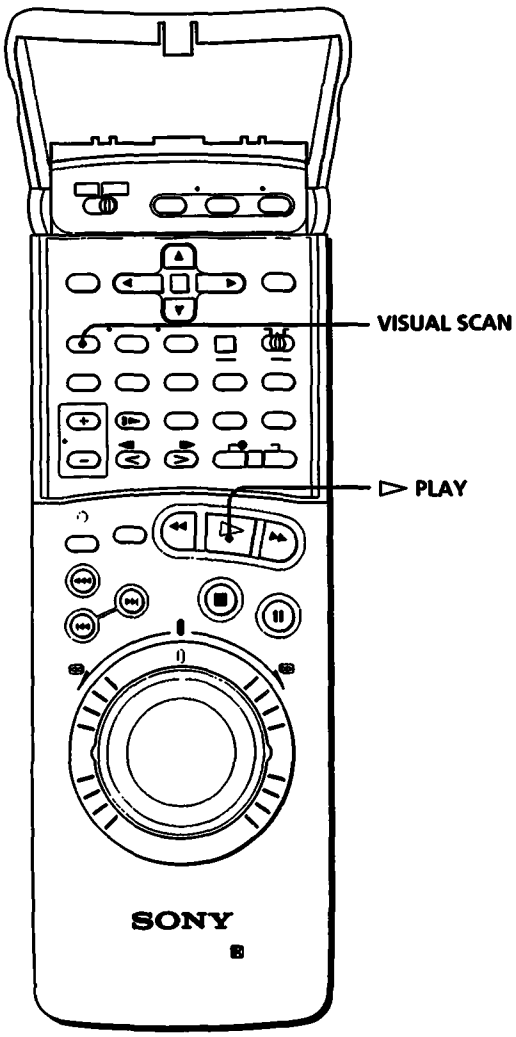
- To locate succeeding programs, press ▶▶I INDEX SEARCH.
- To locate preceding programs, press I◀◀ INDEX SEARCH.

The VCR starts searching and the index number on the TV screen counts down to zero in the order in which the indices were dated. Playback starts automatically from that point.

Searching using the index function – index search (continued)

Notes

- If the tape you are using has no index marks the visual scan function doesn't work.
- If the first scene appears in black and white the other scenes may also be in black and white.
- After you press VISUAL SCAN while the tape is rewinding, the counter displays "-:--:--".
- When using the visual scan function the first scene on the first few seconds of the tape may not be displayed.
- If the tape contains unrecorded portions between scenes, the screen may turn black-and-white during visual scan.

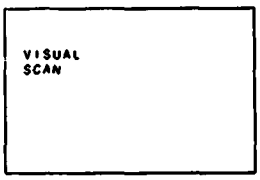


Locating up to 9 index points visually – VISUAL SCAN

Using the visual scan function you can find and play a program you've marked with an index signal. You can view up to 9 different scenes on the TV screen at the same time. Either numbered or dated indexed scenes can be viewed. When you want to find a scene but don't know the exact location you can find it by using this function. You can view up to 9 scenes on the TV screen to search for the desired scene.

1 **Press VISUAL SCAN while in stop mode.**

The tape rewinds automatically. When the tape is rewound to the beginning it then fast-forwards to the first index signal. The first 1 scene appears on the TV screen. The VCR then fast-forwards to the next index signal. After 9 scenes are displayed on the TV screen the VCR stops searching for index signals.



Scene 1	Scene 2	Scene 3
Scene 4	Scene 5	Scene 6
Scene 7	Scene 8	Scene 9

2 **Press VISUAL SCAN again to view the next (10th) index signal in the 1 position.**

3 **When you see the scene you want to view, press ▷ PLAY.**

Scene 10		

Notes

- When you mark an index signal, the recorded sound may be interrupted and a black bar appears on at the bottom of the TV screen, but the tape will not be damaged.
- Leave an interval between indices of at least 2 minutes for SP mode, and at least 4 minutes for LP mode, so that the VCR can detect the signals correctly.
- If you mark or erase an index signal on a tape that has been marked with date codes, the date codes may be erased.
- You can't mark or erase index signals on cassettes that have their safety tab in the red position.

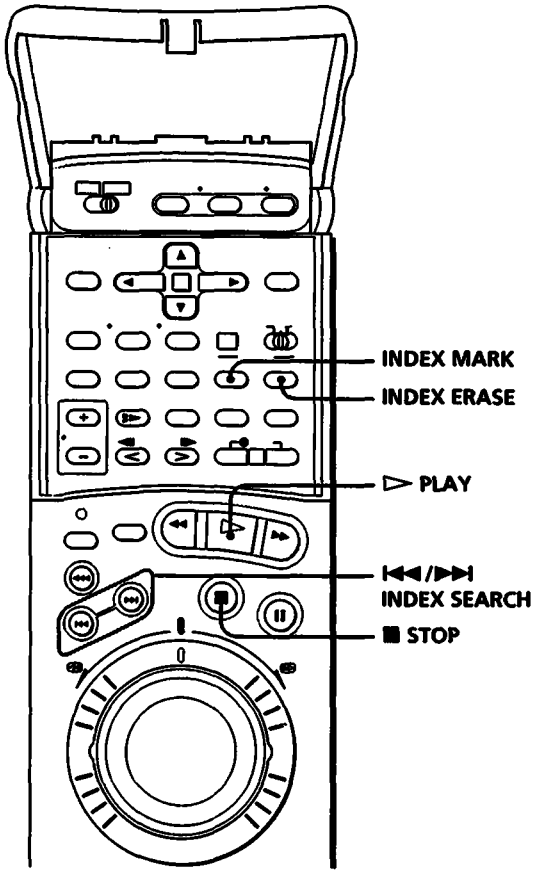
Marking index signals

You can mark and index anywhere on a tape, so that you can easily find the specific point later on. Press INDEX MARK while in recording or playback mode.

This VCR cannot mark a "date" index.

Erasing index signals

You can remove any unwanted "normal" index signals using this function. However, you can't erase "date" index signals.



1 **Press I◀◀/▶▶I INDEX SEARCH while in stop or playback mode.**
The VCR rewinds or fast-forwards the tape automatically, and playback starts when the index number indicated on the TV screen reaches "0."

2 **Press INDEX ERASE during the 10-second preview for the index you want to erase. To stop erasing index signals, press ▷ PLAY or ■ STOP.**

Note

- You can't erase index signals that occur at the beginning of the tape, or those on tapes marked by a video camera or other VCR.

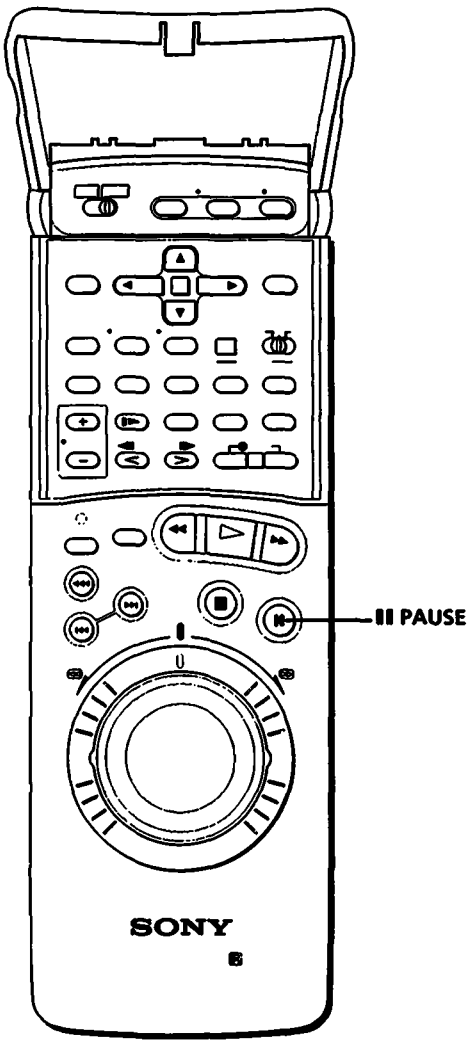
Shuttle editing

This section shows you how to edit VCR recordings in the most basic way: shuttle editing. The VCR also provides the following ways of editing:

- Editing to or from another VCR or camcorder—"Editing with another VCR" (page **60**).
- Editing via the LANC or CONTROL S jacks of two VCRs—"Synchronized editing" (page **62**).
- Taking events from one tape and assembling them onto another tape in any order—"Assemble editing" (page **66**).
- Adding music or narration on the PCM track—"Audio dubbing" (page **70**).

Note

- During shuttle editing, use the JOG dial/SHUTTLE ring on the VCR, not on the remote commander.



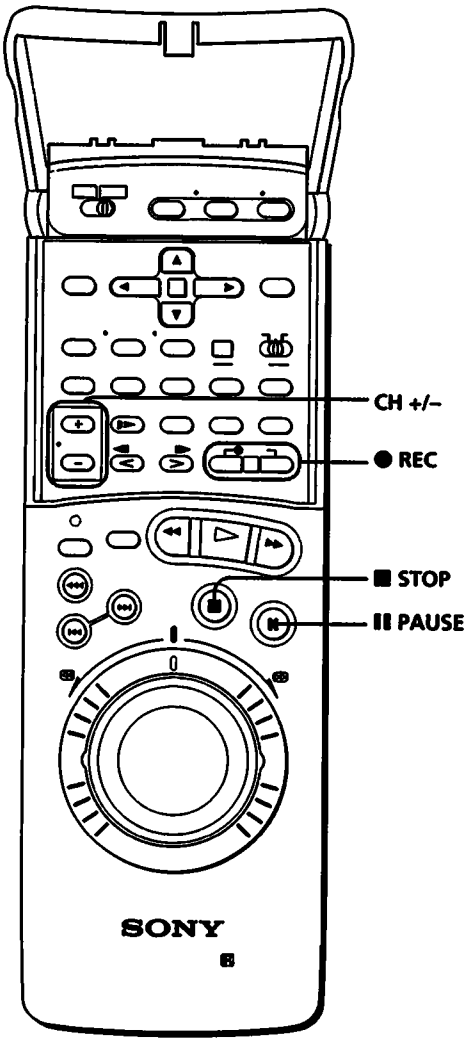
During recording

If you want to cut out events such as TV commercials, you can pause recording and play back the tape in the reverse direction until the beginning of an unwanted event is reached. Then, record over it. This feature only works from the VCR. During timer recording, you can't use this function.

1 **Press II PAUSE during recording.**
The VCR enters recording pause mode.

2 **Turn the JOG dial/SHUTTLE ring on the VCR counter-clockwise to rewind the tape until the unwanted event appears.**
If you turn the JOG dial/SHUTTLE ring, you can select the playback speed by how fast you turn it, and if you turn it.
When you release the dial or ring, the VCR enters recording pause mode.

3 **Press II PAUSE when a desired event appears on the screen.**
Recording starts.



Note

- The picture may be distorted for a moment at the cut-out point (recording end point).

During playback

You can re-record onto an unwanted portion of a pre-recorded tape. Use the JOG dial/SHUTTLE ring on the VCR.

1 **When an unwanted event appears during playback, press II PAUSE.**
The VCR enters the playback pause mode.

2 **Turn the JOG dial/SHUTTLE ring on the VCR until the beginning of the unwanted event appears on the screen.**
Turn the JOG dial/SHUTTLE ring to the desired playback speed. When you release the dial or ring, the VCR enters playback pause mode.

3 **Press ● REC on the VCR or the remote commander.**
The VCR enters recording pause mode.

4 **Select a new program for re-recording. Press CH +/– on the remote commander or CHANNEL +/– on the VCR.**
If you have made the connection using the line input jacks, press INPUT SELECT.

5 **Press II PAUSE when the event you want to record appears on the screen.**
Recording begins.

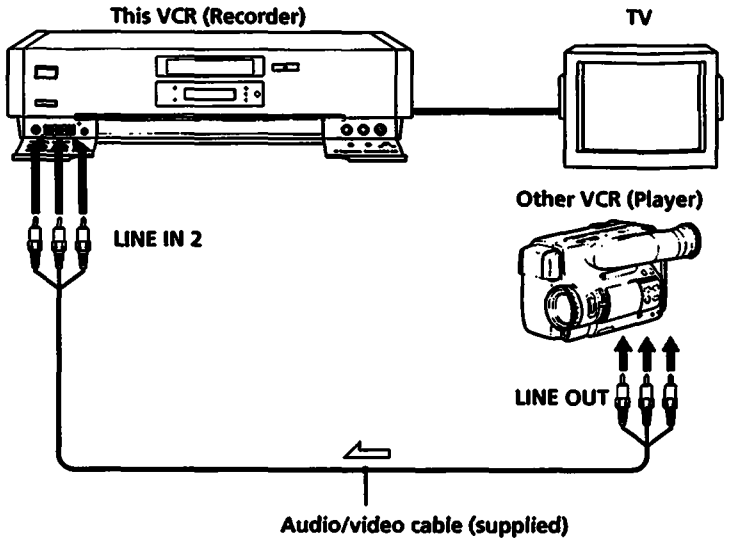
To stop recording

Press ■ STOP.

Editing with another VCR

This section shows you how to edit to or from another VCR or camcorder. You can make a copy of a tape using this VCR for recording or playback.

How to hook up to record on this VCR



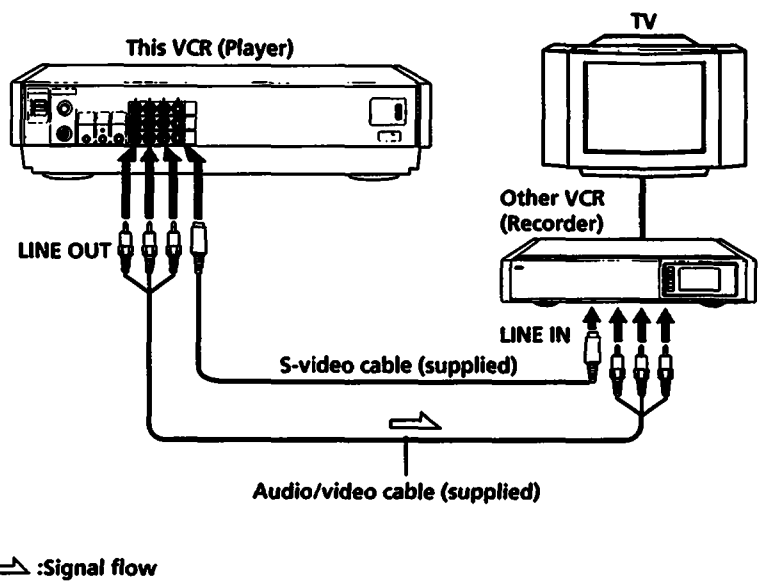
Tips

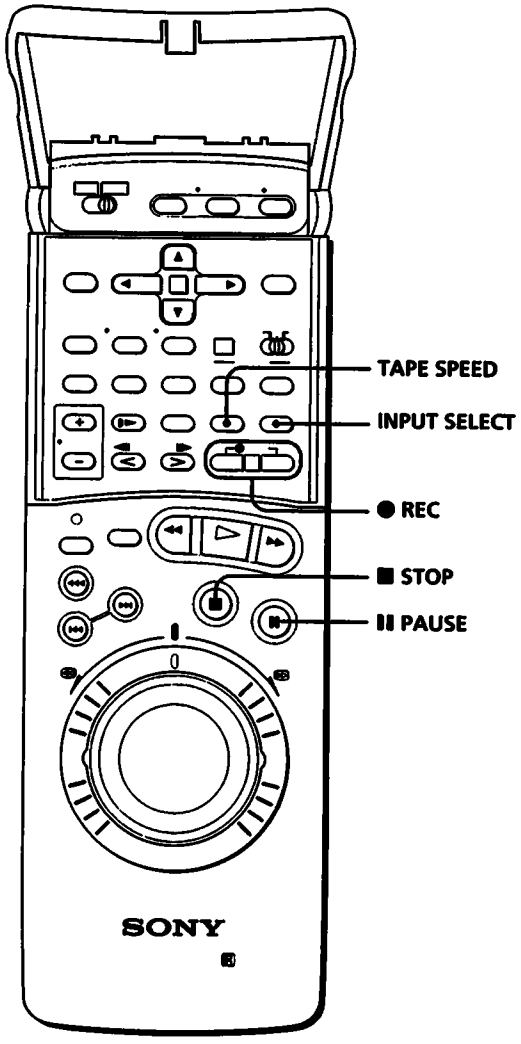
- Make sure you connect the plugs to jacks of the same color.
- To connect the playback VCR, you can use the LINE IN 1 jacks as well. In this case, press INPUT SELECT to display "L1" in the display window.
- If the playback VCR is a monaural type and you use LINE IN 2 on the front of the VCR, connect to the AUDIO L (white) jack.

Notes

- If the playback VCR has an S-video connector, use the supplied S-video cable unless you have used it for the TV-VCR connection. This connection gives you a picture of higher quality than using the video cable. When using VIDEO or LINE IN 1 S VIDEO, set L IN 1 VIDEO to S in the SET UP MENU.
  If you use the VIDEO IN jack and S VIDEO IN connector at the same time when using LINE IN 2, the S VIDEO IN connector takes priority.
- When connecting the VCRs, do not simultaneously connect the LINE IN and LINE OUT jacks on your VCR. A humming noise may occur if you do this.
- When using this VCR for playback, press EDIT on the VCR, or the on-screen information will appear on the TV screen.

How to hook up to record to another VCR





Note

- Make sure that the safety tab is in the correct position. If the playback VCR is a VHS model, make sure that the safety tab on the source tape has been removed.

Tips

- To make your editing more precise, release the VCRs from pause by pressing II PAUSE buttons on the VCRs, not on the remote commander.
- To cut out unwanted events while editing, press II PAUSE on this VCR when an unwanted event begins. When it ends, press II PAUSE again to resume recording (assemble editing).

Operation (when recording on this VCR)

Before you start editing

- Press INPUT SELECT to display "L2" in the display window.
- Press TAPE SPEED to select the recording tape speed (SP/LP).
- If the other (playback) VCR has an EDIT function, set it to ON.

1 **Insert a source tape into the playback VCR. Search for the point to start playback and set the VCR to playback pause.**

2 **Insert a tape into this (recording) VCR. Search for the point to start recording and press II PAUSE.**

3 **Press ● REC on this VCR and set it to recording pause.**

4 **To start editing, press the II PAUSE buttons on both VCRs to release the VCRs from pause.**
For best results, press the pause button on the playback VCR just before pressing II PAUSE on this VCR.

To stop editing

Press the ■ STOP buttons on both VCRs.

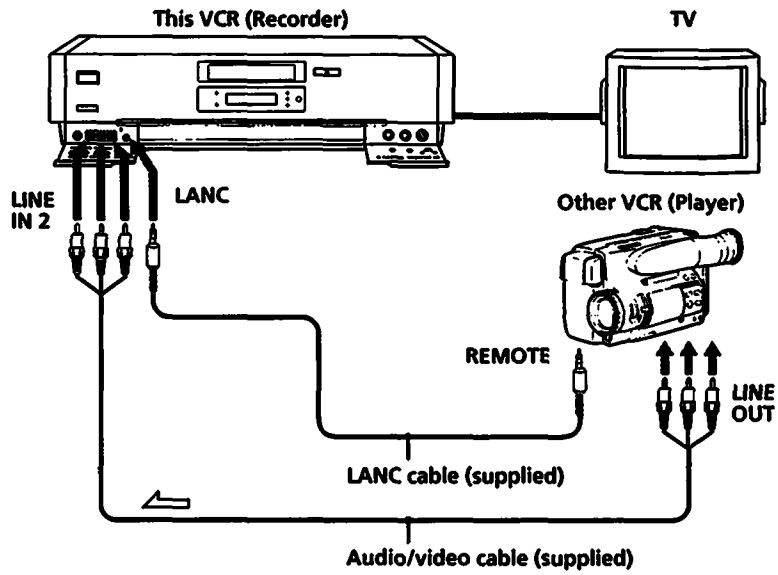
Synchronized editing

If the playback VCR has a LANC or CONTROL S jack, connect the VCRs via the LANC or CONTROL S jacks. This additional connection lets you control both VCRs from one VCR for easier editing.

Notes

- If the playback VCR is a monaural type and you use LINE IN 2 on the front of the VCR, connect to the AUDIO L (white) jack.
- When connecting the VCRs, do not connect both LINE IN and LINE OUT jacks on your VCRs simultaneously. Doing so may cause a humming noise.
- If the playback VCR has an S-video connector, use the supplied S-video cable. This connection gives you a picture of higher quality than using the video cable. When using VIDEO or LINE IN 1 S VIDEO, set L IN 1 VIDEO to S in the SET UP MENU.
  If you use the VIDEO IN jack and S VIDEO IN connector at the same time when using LINE IN 2, the S VIDEO IN connector takes priority.
- You cannot set the LANC mode to M for the playback VCR. Set the LANC mode to M for this VCR to make it control the playback VCR.
- Do not use the same LANC mode setting for both VCRs, as this may cause a malfunction.
- When using this VCR for playback, press EDIT on the VCR, or the on-screen information will appear on the TV screen.

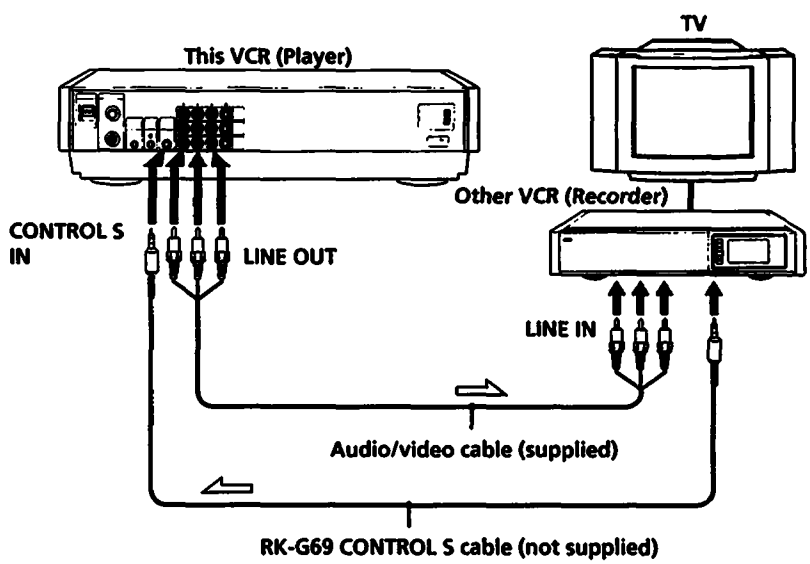
How to hook up via the LANC jacks



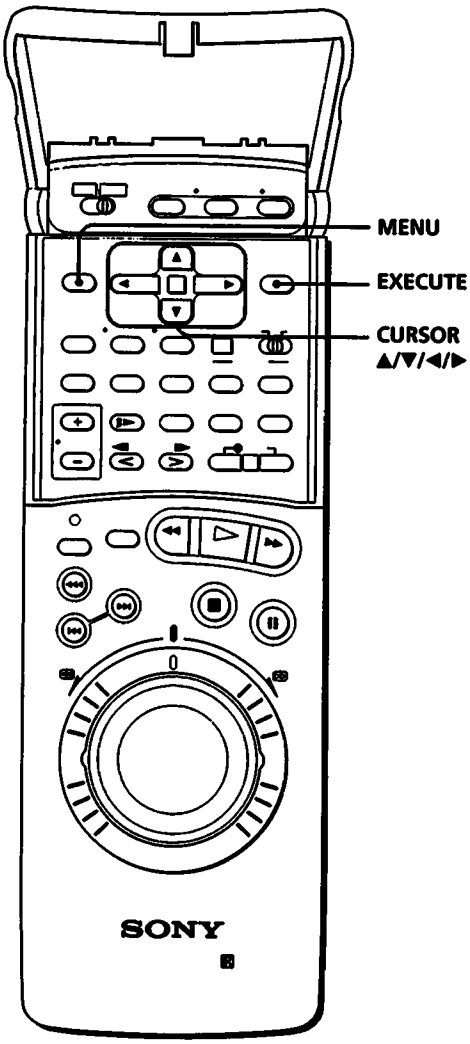
:Signal flow

How to hook up via the CONTROL S jacks

The CONTROL S connection only enables you to pause and release pause. Use the LANC jack if the recording VCR has both LANC and CONTROL S jacks.



:Signal flow



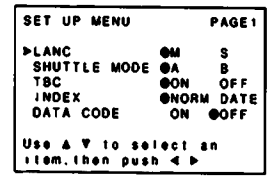
Notes

- You can't do synchronized editing on VCRs that do not have a LANC connector.
- If the tape recording condition of the playback VCR is poor, this VCR may display a blue color on the TV screen for a moment. This is not an indication of a malfunction.

Setting the LANC mode

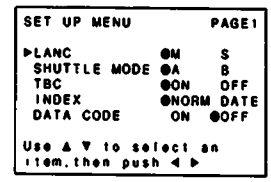
The LANC mode setting determines which VCR controls which. Here's how to control the playback VCR from this VCR.

1 **Press MENU and select SET UP MENU.**



2 **Set LANC to M by pressing CURSOR ▲/▼/◀/▶.**

On the playback VCR, set the LANC mode to S and the SHUTTLE MODE to either A or B, depending on the type of playback VCR you are using. See "Using the SET UP menu" on page **32**.



3 **Press EXECUTE to store the setting.**

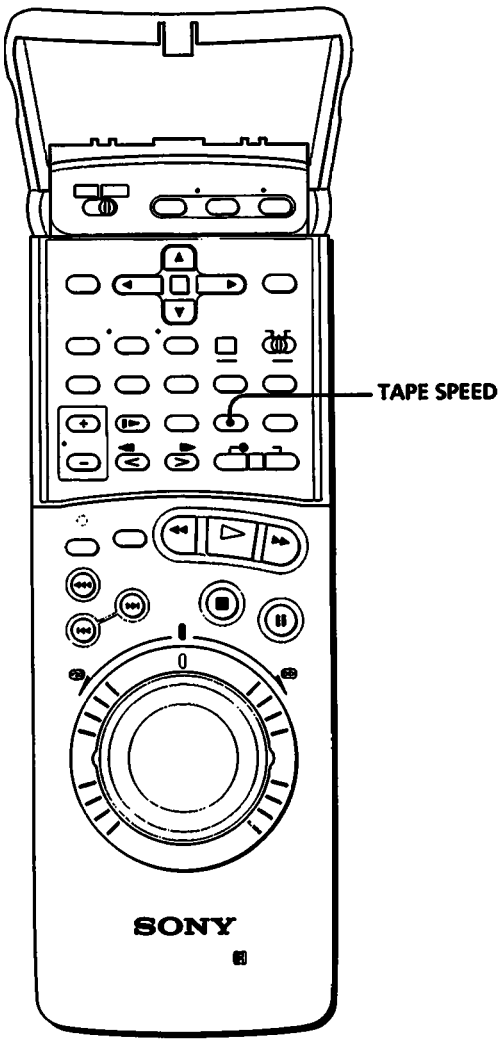
To control this VCR from the playback VCR

Set LANC to S on this VCR and to M on the playback VCR.

About LANC

LANC stands for Local Application Control System. The LANC connector is used for controlling the tape transport of video equipment and peripherals connected to it. This connector has the same function as connectors indicated as CONTROL L or REMOTE.

Synchronized editing (continued)



Operation (when recording on this VCR)

Before you start editing

- Make connections according to the illustration on page **62**.
- If the playback VCR is equipped with an S-video output connector, use the supplied S-video cable for additional connection of the VCRs.
- If the playback VCR is a monaural type, connect the white plug to its audio output jack and the white plug on the other end to the LINE IN 2 AUDIO L (white) jack of this VCR.

On the playback VCR

- If available, activate the EDIT mode.
- If available, set LANC to S or equivalent.

On this VCR

- Set LANC to M in the SET UP MENU. See "Using the SET UP menu" on page **32**.
- Adjust the recording level. For details, see page **37**.
- Check if the playback VCR has a JOG/SHUTTLE function, then set SHUTTLE MODE to either A or B. (See "Using the SET UP menu" on page **32**.) Note that some VCRs do not have a JOG/SHUTTLE function.
- Select the tape speed, SP or LP, using the TAPE SPEED button.

1 **Insert a source tape into the playback VCR. Insert a tape for recording into this VCR.**

2 **Press EDIT STANDBY on this VCR so that the EDIT STANDBY indicator lights up on the operation panel.**
This VCR enters recording pause and the playback VCR enters pause.

3 **Press LANC REMOTE on the VCR so that the LANC REMOTE indicator lights up on the operation panel. Then turn the JOG dial/SHUTTLE ring to locate the start point on the playback VCR.**
You can also use the tape transport buttons on this VCR.

4 **Release the JOG dial/SHUTTLE ring when you have found the desired point.**
The playback VCR enters playback pause. If you have used any of the tape transport buttons, set the playback VCR to playback pause.

5 **Press LANC REMOTE on the VCR so that the indicator goes off. Then turn the JOG dial/SHUTTLE ring to locate the insertion start point on this VCR's tape.**

6 **Press SYNCHRO EDIT/START.**
Synchronized editing starts.

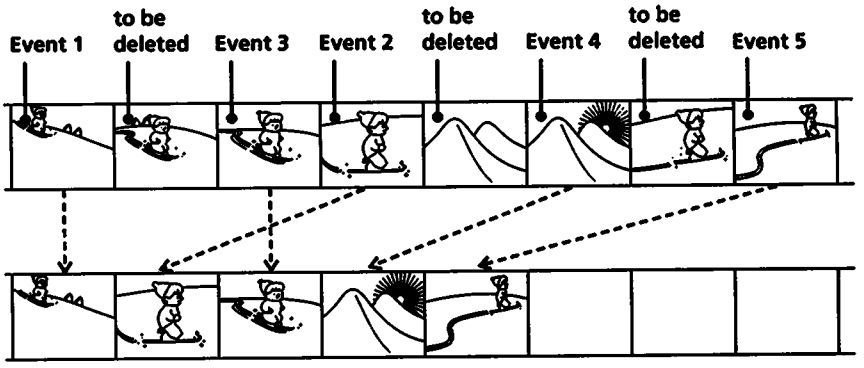
7 **When you have finished your editing session, press SYNCHRO EDIT/START.**
Both VCRs enter recording pause.

8 **To edit more scenes, repeat steps 3 to 7.**

9 **When you have finished your editing session, press EDIT STANDBY.**
Both VCRs stop.

Assemble editing

With this function you can take events from one tape and assemble edit them onto another tape.
You can insert as many events onto to the new tape that you require. Using the assemble editing function, you can assemble edit up to eight different events at a time.



Tips

- If the playback VCR you're using does not have the TIME CODE WRITE function but only a real-time counter, precise editing cannot be guaranteed.
- For the TIME CODE WRITE function to work correctly, you must enter the time code on the entire portion of the tape you want to edit.
- When using the TIME CODE WRITE function, you can easily search for a desired event as each frame is given a readable code signal.

Notes

- The TIME CODE WRITE function on this VCR and that on professional-level VCRs are not compatible.
- If you press another button while writing the time code, writing stops automatically.
- If you use a tape that has been recorded in both SP and LP tape speeds, the TIME CODE WRITE function may not work properly.
- If you connect to a video camera that shows streaks or snow when freezing the picture, the text on the screen may be difficult to read. Make your editing decisions visually to ensure that the events you want to edit are precisely aligned.
- When using the TIME CODE WRITE function, a black band may appear at the bottom of the screen. This is not an indication of a malfunction. This black band will not appear on the events you are going to edit.

Using the TIME CODE WRITE function on a playback tape

When you connect this VCR to a VCR that features the TIME CODE WRITE function, you can use this function for assemble editing. This function allows you to perform more precise editing. It inserts frame position signals on the tape, and thus indexes (by numbers) the portions to be edited. However, if there are unrecorded segments on the portion that you want to edit, precise editing can't be guaranteed. In this case you must enter the time codes onto the playback tape in the other VCR.

1 Rewind the playback tape to the beginning.
2 Press ▷ PLAY, then press ❚❚ PAUSE.
3 Press TIME CODE WRITE on the VCR.
4 Press ❚❚ PAUSE to start playback.
Time code information is automatically written onto the tape.
5 Press ■ STOP at the end point of the portion that you want to edit.
Time code insertion stops.

Operation (when recording on this VCR)

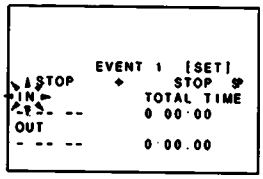
Notes

- When you use LANC REMOTE, you can control tape operation on the playback VCR.
- Set the SHUTTLE MODE option on the playback VCR to either A or B to match the setting on this VCR. See "Using the SET UP menu" on page **32**.
- Make sure that the cassette you insert into this VCR has its tab set to REC.
- The ASSEMBLE button is only operable in stop mode.

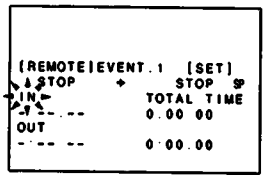
Before you start editing

- Connect this VCR to the playback VCR using the same connections as illustrated in the section "Synchronized editing" on page **62**. (Be sure to read the operating instructions for the playback VCR before making connections.)
- Set the TV to video input.
- Press INPUT SELECT to select the line input that the playback VCR is connected to.
- If the playback VCR has a TIME CODE function, activate it to display the time code in the display window counter.
- On the playback VCR, set the SHUTTLE MODE to either A or B (see page **32**).

1 **Press ASSEMBLE on this VCR.**
The assemble editing menu appears on the TV.

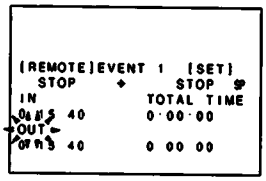


2 **Press LANC REMOTE on this VCR.**
"REMOTE" appears on the TV screen, and the REMOTE indicator lights up on the operation panel. You can now control the other VCR's tape transport buttons from this VCR.



3 **Find the first frame of the event you want to assemble edit.**
Using this VCR to operate the playback VCR to find the event you want to edit, then proceed to step **4**.

4 **Press MARK on the VCR to mark the "IN" frame for the event you are assemble editing.**



(continued)

Assemble editing (continued)

Tip

- The TOTAL TIME figure gives the total time for all the events. The tape speed of the recording tape must match that of the events to be entered, or the events will not be recorded properly.

Notes

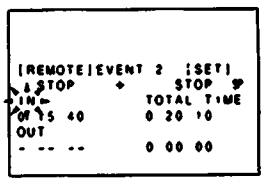
- Leave a space of about two seconds between the IN frame and OUT frame, or the events cannot be marked correctly.
- When you want to stop assemble editing, press ASSEMBLE again.
- When the TIME CODE is less than 0:01:00:00, the editing will not be very precise. In this case, do the editing manually as described in the "Synchronized editing" section on page **62**.

5 **Find the last scene of the event you want to assemble edit.**

Once the end of the first event has been found, go to step **6**.

6 **Press MARK on the VCR to mark the "OUT" frame.**

"IN" flashes, and the total time of the event you have selected is displayed. After a couple of seconds, the VCR is ready for setting the next event.



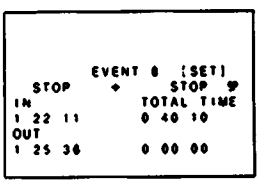
7 **Repeat steps 3 to 6 to select another event for editing.**

Up to 8 events can be selected for assemble editing.

8 **When you have finished selecting your events, press ■ STOP.**

9 **Press LANC REMOTE when you are finished designating the required events.**

The REMOTE indicator no longer appears. The playback VCR can no longer be controlled by this VCR.

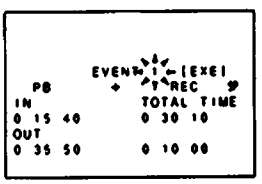


10 **Find the recording start point using this VCR.**

When the start point has been found, press ❚❚ PAUSE and then ● REC.

11 **Press SYNCHRO EDIT/START.**

"EXE" appears on the TV screen, and assemble editing starts. When editing is completed, the VCR enters the recording pause mode.



12 **When you have finished your editing session, press ASSEMBLE.**

To assemble edit more than 8 events

Repeat the above described procedure to assemble edit the additionally required number of events.

1 After you've finished one assemble editing session, press ASSEMBLE
The assemble editing mode is cancelled. The contents stored in memory are deleted.
2 When the VCR enters recording pause mode, press ■ STOP.
3 Repeat from step **1** on page **67**.

To change the settings stored in memory

Press BACK on the VCR.
Only the last event you have entered for assemble editing can be changed. If you press BACK twice in a row, the event entered last is deleted.

To check the settings stored in memory

Press ■ STOP. To cycle through the designated events, press BACK.

To stop assemble editing temporarily

Press SYNCHRO EDIT/START. When you wish to resume assemble editing, editing starts from the first event.

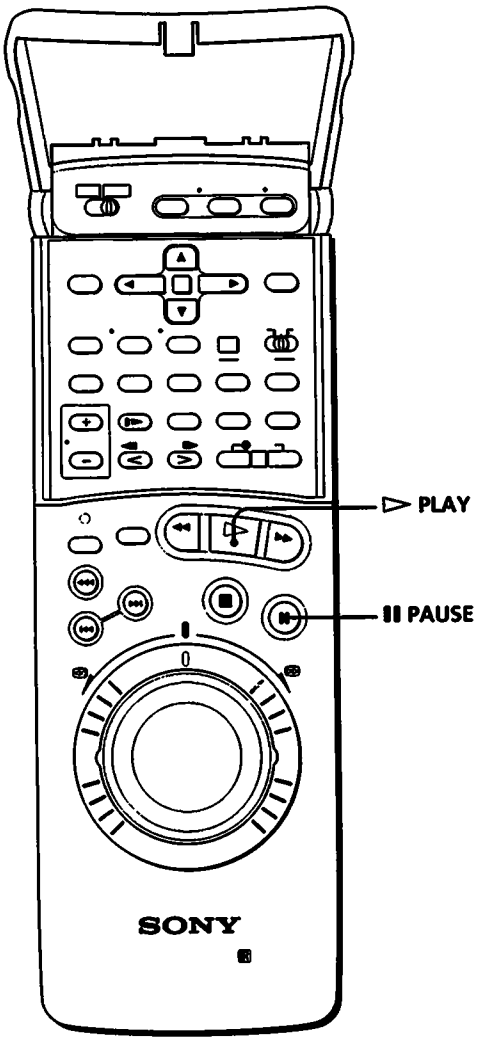
Tip

- For the purpose of protecting the tape, when you are in recording pause mode, after 5 minutes the VCR automatically enters the stop mode.

Notes

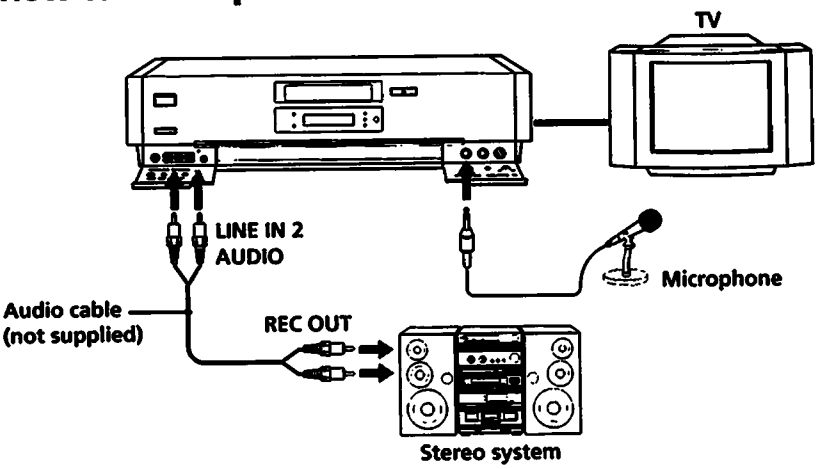
- When you press BACK, the VCR returns to the last frame of the event you have selected. Press BACK again to return to the first frame of the event.
  If you haven't designated an end frame, the tape records through to the end.
- If you press ❚❚ PAUSE during assemble editing, the event you are editing is set. If you have another event, the next event is also automatically edited.
- During fast-forwarding or rewinding, if the TIME CODE indicator on the playback VCR should show "-:--:--", the assemble editing function may not work. In this case, please use the synchronized editing function instead.

Audio dubbing



You can add music or narration on a pre-recorded tape while watching the VCR playback picture. Audio-dubbed sound is recorded on the PCM track. (See page **36**.)

How to hook up



Operation

Before you start editing

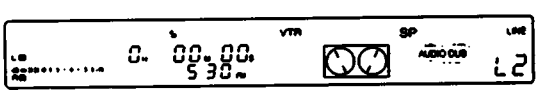
- Press INPUT SELECT to display "L2" in the display window.
- Set the AUDIO MONITOR selector to PCM.

1 **Set the PCM REC LEVEL control to the desired setting.**
This allows you to balance the sound level of the sound to be dubbed against that of the standard track.

2 **Press ▷ PLAY.**

3 **Find the start point of the tape portion that you want to dub new sound onto, and press II PAUSE.**

4 **Press AUDIO DUB.**
The AUDIO DUB indicator lights up in the display window.



Notes

- You must be in playback pause mode before pressing AUDIO DUB. (If you are in recording pause mode, you cannot use the audio dubbing features.)
- Audio dubbing cannot be done if the safety tab on the cassette is slid to the show the red portion.

5 **Press II PAUSE when you start the playback source, or want to start adding narration using a microphone.**

6 **When you have finished your audio dubbing session, press ■ STOP on this VCR.**

To listen to the sound on both the PCM and the standard track

Set the AUDIO MONITOR switch on the operation panel to MIX. If the sound is hard to distinguish, use the STD AUDIO LEVEL to adjust the standard sound level. You cannot adjust the PCM sound level.

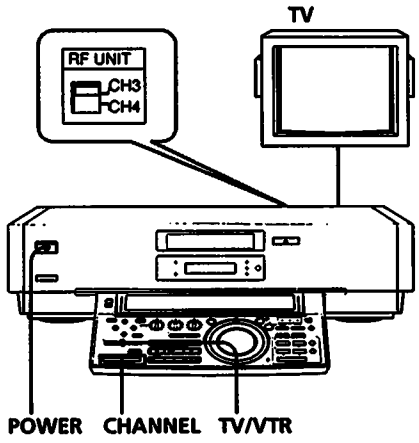
Tips

- See "How sound is recorded on a video tape" on page **36**.
- For fade-in operation, adjust the PCM REC LEVEL control from the zero point to the normal position.
  For fade-out operation, turn it from the normal position to the zero point.
- The sound from the LINE IN AUDIO 1 or 2 jacks and the MIC jack on the front panel can be mixed.

Notes

- The dubbed sound cannot be played back by a VCR without PCM recording or playback functions.
- Dubbing erases the pre-recorded sound on the PCM track.
- During dubbing, black bars may appear in the lower parts of the screen. This does not affect the recorded images.
  The picture may shake or colors may fade on certain TVs.
- Sound from a microphone is recorded in monaural.
- When the microphone is not is use, do not connect the microphone to the MIC jack, or the sound will be mixed with the sound from LINE IN AUDIO 1 or 2.
- If you dub new sound onto a tape that contains DATA CODE information, this information is erased.

General setup information



Setting the RF unit

When connecting the VCR to the TV using only the antenna, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.
If you connect the VCR to the TV using the supplied audio/video cable, you can skip this step.

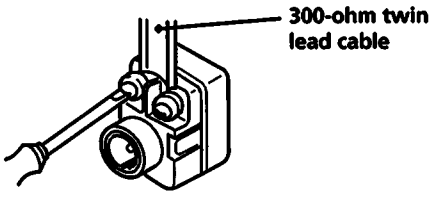
1 Set the RF UNIT switch on the rear of the VCR to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

2 Press POWER to turn on the VCR.

3 Press TV/VTR to turn on the VTR indicator in the VCR's display window.

4 Press CHANNEL +/– to display a channel number in the display window. Select an active channel number in your area.

5 Turn on your TV and set it to the channel you selected in step **1** (channel 3 or 4).
The selected TV channel broadcast appears on the TV screen. If the channels change when you press CHANNEL +/–, you have made the correct setting.
Whenever you use the VCR, set the TV to the channel selected in step **1**.



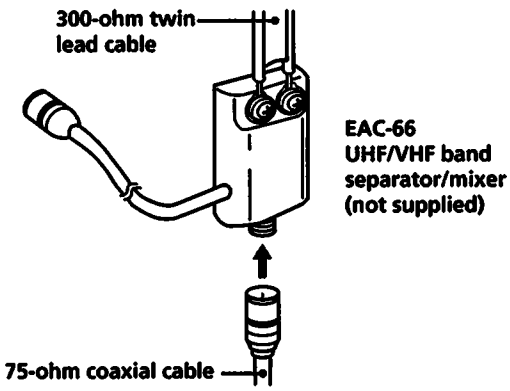
Attaching the external antenna connector

When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the antenna connector.

2 Wind the twin leads around the screws on the antenna connector.

3 Retighten the screws.



Attaching an UHF/VHF band mixer

When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the mixer.

2 Wind the twin leads around the screws on the mixer.

3 Retighten the screws.

4 Connect the 75-ohm coaxial cable to the mixer.

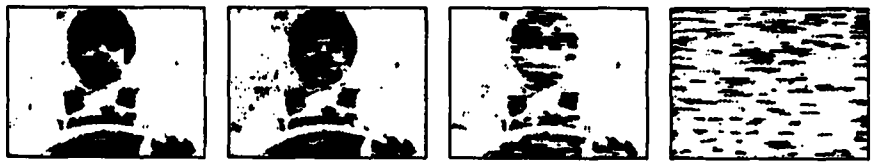
Troubleshooting

	Symptom	Remedy
Power	The POWER switch does not function.	• Connect the AC power cord securely. • Make sure the VCR is not standing by for timer recording.
Clock	The clock has stopped and "-:--" lights in the display window.	• The clock stops if the VCR is disconnected from the wall outlet for more than an hour. Reset the clock (and timer).
Playback	The playback picture does not appear on the TV screen.	• Make sure the TV is set to the channel for the VCR, or set it to video input.
	The picture is not clear.	• Adjust the tracking in the TRACKING ADJUST menu. • The video heads are dirty (see below). Clean the video heads using the Sony video head cleaning cassette. If this cleaning cassette is not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service charge will be required). Do not use a commercially available wet-type cleaning cassette, as it may damage the video heads. • The video heads may have to be replaced. Consult your local Sony dealer for more information.
	The picture has no sound.	• The tape is defective. Use a new tape.
	Both main and SAP sounds are heard.	• When you play a bilingual tape, make sure the AUDIO MONITOR switch on the operation panel is set to STD.

(continued)

Symptoms caused by contaminated video heads

• Normal picture **• Rough picture** **• Unclear picture** **• No picture (or black & white screen appears)**



initial ——————————► **terminal**

	Symptom	Remedy
Recording	A TV program does not appear on the TV screen.	• Make sure the TV is set to the channel for the VCR, or set it to video input.
	TV reception is poor.	• Adjust the TV antenna.
	The tape ejects when you press ● REC.	• Check that the safety tab has not been slid to show the red portion underneath.
	Nothing happens when you press ● REC or TIMER REC ON/OFF.	• Make sure the tape has been wound to the beginning. • Select the correct source with the INPUT SELECT button. Select a channel number when recording TV programs; select "L1" or "L2" when recording from other equipment.
Timer recording	The timer does not operate.	• Check that the clock is set. The clock and timer stop if the VCR is disconnected from the wall outlet for more than one hour. • Make sure a tape has been inserted. • Check that the safety tab has not been slid to show the red portion underneath. • Make sure the tape has been wound to the beginning. • Make sure a program has been set for timer recording. • Check that the cable box is turned on. • When you use cable box control, make sure the CABLE BOX CONTROL option is set to ON.
Others	A tape cannot be inserted.	• Check that a tape isn't already in the tape compartment.
	The remote commander does not function.	• Make sure you are pointing the remote commander at the remote sensor on the VCR. • Replace all the batteries in the remote commander with new ones if they are weak. • Set the COMMAND MODE, VTR1, VTR2, or VTR3, to the same position on both the VCR and the remote commander.
	The channels on the VCR cannot be changed.	• Make sure the CABLE BOX CONTROL option is set to OFF.
	You cannot control other TVs.	• Set your TV's code number. The code number resets to 1 when you replace the batteries in the remote commander.
	The VCR needs to be cleaned.	• Clean with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine.
	When you do synchronized editing, you can't control the other VCR from this VCR.	• The LANC mode of the other VCR is set to S (see page **32**). • The LANC mode of this VCR is set to M (see page **32**).

If you have any questions or problems concerning your unit, please consult your nearest Sony service facility.

Specifications

System

Video recording system
Rotary two-head helical scanning FM system

Audio recording system
Standard: Rotary head FM system (2 channels)
PCM: PCM system (2 channels)

Video signal
NTSC color, EIA standards

Usable cassettes
8 mm video format cassettes

Tape speed
SP: 14.3 mm/sec.
LP: 7.2 mm/sec.

Recording/playback time
SP: 2 hrs., LP: 4 hrs. (using a Sony E6/P6-120 cassette)
SP: 3 hrs., LP: 6 hrs. (using a Sony E6-180 cassette)

Fast-forward/rewind time
2 min. 15 sec.
1 min. (high-speed rewind)
(using a Sony E6/P6-120 cassette)

Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A – 8 to A – 1, A – W, W+1 to W+84

Inputs and outputs

Antenna
75-ohm asymmetrical antenna terminal for VHF/UHF

LINE IN 1 and 2
S VIDEO IN (4-pin mini DIN) 1 each
Y: 1 Vp-p 75 ohms (unbalanced), sync negative
C: 0.286 Vp-p (color burst) 75 ohms (unbalanced)
VIDEO IN (phono jack) 1 each
Input signal: 1 Vp-p, 75 ohms (unbalanced), sync negative
AUDIO IN (phono jack) 2 each
Input level: –7.5 dBs
(0 dbs = 0.775 Vrms)
Input impedance: more than 47 kilohms

LINE OUT 1 and 2
S VIDEO OUT (4-pin mini DIN) 1 each
Y: 1 Vp-p 75 ohms (unbalanced), sync negative
C: 0.286 Vp-p (color burst) 75 ohms (unbalanced)
VIDEO OUT (phono jack) 1 each
Output signal: 1 Vp-p, 75 ohms (unbalanced), sync negative
AUDIO OUT (phono jack) 2 each
Output level: –7.5 dBs
(0 dbs = 0.775 Vrms)
Output impedance: less than 10 kilohms

Microphone input
Minijack –60 dBs, for low impedance microphone

Headphone jack
Stereo minijack –26 dBs, 8 ohms

CONTROL S IN
Minijack

LANC
Stereo mini-minijack

General

Power requirements
120 V AC, 60 Hz

Power consumption
31 W

Operating temperature
5°C to 40°C (41°F to 104°F)

Storage temperature
–20°C to 60°C (–4°F to 140°F)

Dimensions
Approx. 466 × 119 × 366 mm (w/h/d)
(Approx. 18 3/8 × 4 3/8 × 14 1/2 inches) including projecting parts and controls

Weight
Approx. 8.5 kg (18 lb 12 oz)

Supplied accessories

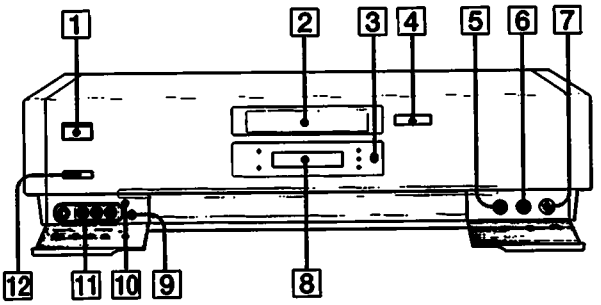
Remote commander (1)
Size AA (R6) batteries (2)
Cable mouse (1)
75-ohm coaxial cable with F-type connectors (1)
S-video cable (1)
Audio/video cable (1)
AC power cord (1)
LANC cable (1)

Design and specifications are subject to change without notice.

Index to parts and controls

Refer to the pages indicated in ( ) for details.

Front panel



1 POWER switch/indicator

2 Tape compartment

3 Remote sensor (7)

4 ⏏ EJECT button

5 Microphone jack (70)

6 Headphone jack

7 MIN/MAX (headphone volume) control

8 Display window

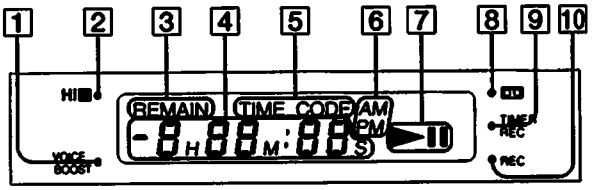
9 LANC jack

10 CL (clear/reset) button

11 LINE IN 2 AUDIO/VIDEO/S-VIDEO jacks (60)

12 OPERATION PANEL OPEN/CLOSE switch (8)

Front panel display window



1 VOICE BOOST indicator (49)

2 Hi8 indicator (5)

3 REMAIN indicator (35)

4 Linear time counter/Clock

5 TIME CODE indicator (66)

6 AM/PM indicator

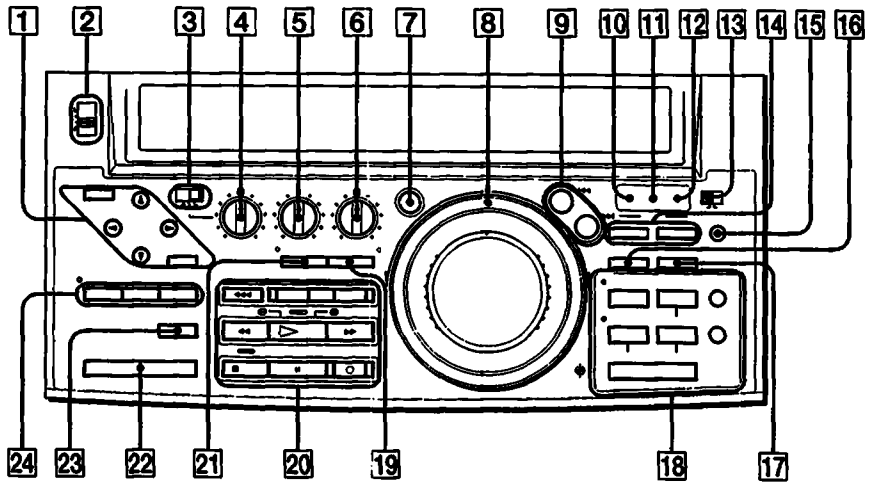
7 Tape operation indicator

8 Tape indicator

9 TIMER REC indicator

10 REC (recording) indicator (37)

Operation panel



1 MENU, CURSOR ▲/▼/◀/▶, and EXECUTE buttons (23)

2 COMMAND MODE VTR OFF/1/2/3 switch (8)

3 AUDIO MONITOR PCM/MIX/STD (Hi-Fi) switch (36)

4 STD AUDIO LEVEL control (71)

5 PCM REC BALANCE control (37)

6 PCM REC LEVEL control (37)

7 VISUAL SCAN button (56)

8 JOG dial/SHUTTLE ring (34)

9 ⏮/⏭ INDEX SEARCH buttons (55)

10 TBC indicator (33)

11 Hi-Fi STEREO indicator (36)

12 PCM indicator (36)

13 TAPE SELECT switch (35)

14 INDEX MARK/ERASE buttons (57)

15 TAPE SPEED (SP/LP) button(37)

16 COUNTER RESET button (35)

17 COUNTER SELECT button (35)

18 Tape editing buttons

19 TIME CODE WRITE button (66)

20 Tape operation buttons

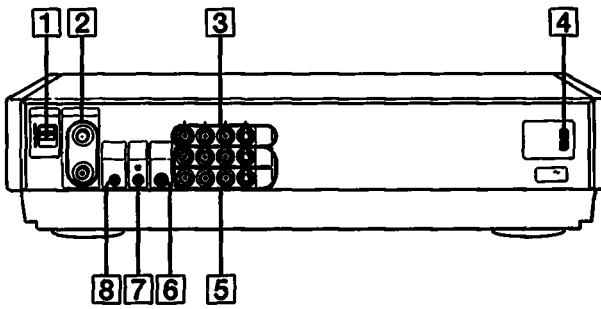
21 AUDIO DUB button (70)

22 CHANNEL buttons (25)

23 TIMER CLEAR button (46)

24 DNR button (53)
TV/VTR button (39)
INPUT SELECT button (37)

Rear panel



1 RF UNIT switch (72)

2 VHF/UHF connectors (12)

3 LINE IN 1 AUDIO/VIDEO/S VIDEO jacks (60)

4 AC IN connector

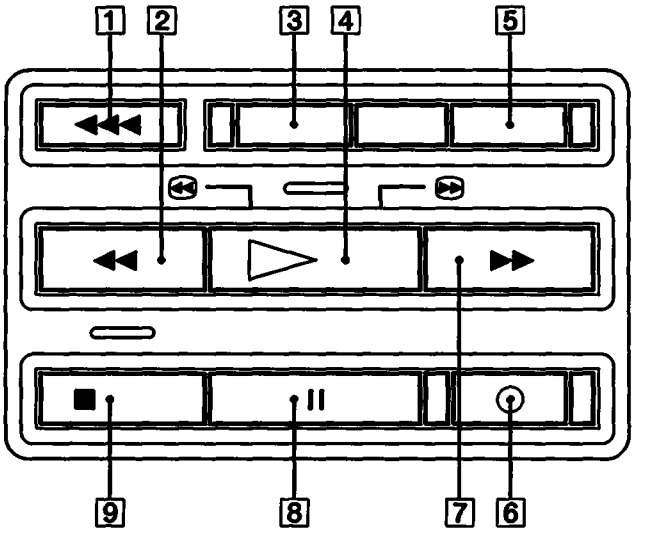
5 LINE OUT AUDIO/VIDEO/S VIDEO jacks (11)

6 CONTROL S IN jack (62)

7 LANC connector (62)

8 CABLE BOX CONTROL connector (12)

Tape operation buttons



1 ◀◀◀ HI-SPEED REW button (34)

2 ◀◀ REW button (34)

3 TIMER REC ON/OFF button (38)

4 ▷ PLAY button (34)

5 QUICK TIMER button (38)

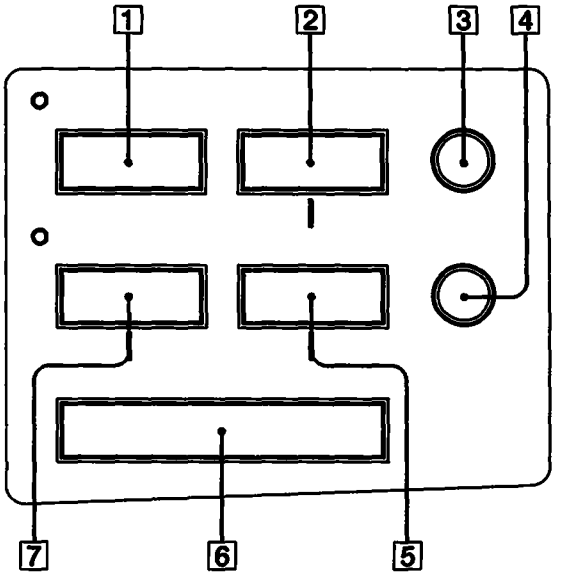
6 ● REC button (37)

7 ▶▶ FF button (34)

8 ❚❚ PAUSE button (34)

9 ■ STOP button (34)

Tape editing buttons



1 LANC REMOTE button (65)

2 ASSEMBLE button (67)

3 EDIT ON/OFF button (60)

4 BACK button (69)

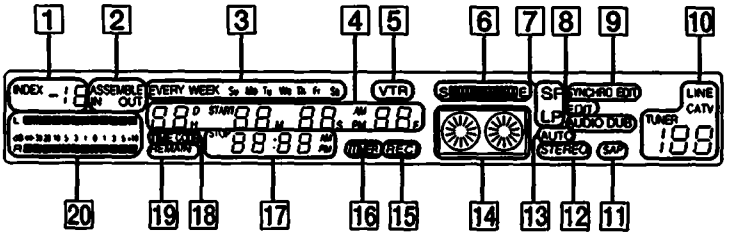
5 MARK button (67)

6 SYNCHRO EDIT/START button (65)

7 EDIT STANDBY button (65)

Index to parts and controls
(continued)

Operation panel display window



1 INDEX SCAN and index number indicator (54)

2 ASSEMBLE IN/OUT indicator (67/68)

3 EVERY WEEK and weekday indicators (43)

4 Linear time counter/recording start time indicator (35)

5 VTR indicator (39)

6 Remaining tape length indicator (35)

7 SP/LP (tape speed) indicators (38)

8 EDIT indicator (60)

9 SYNCHRO EDIT indicator (65)

10 Channel number/input mode indicator

11 SAP indicator (39)

12 STEREO indicator (39)

13 AUTO indicator (49)

14 Cassette indicator

15 REC indicator (37)

16 TIMER indicator (38)

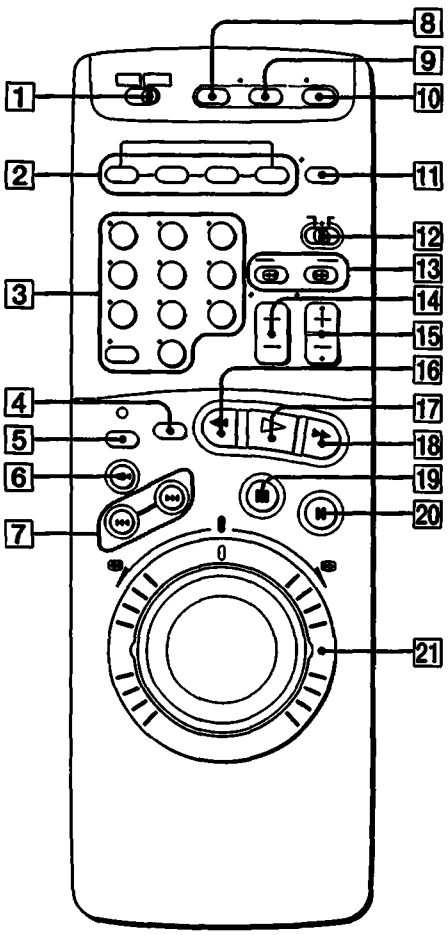
17 Quick timer recording time/current time/recording stop time (23)

18 TIME CODE indicator (66)

19 REMAIN indicator (35)

20 Peak level meter

Remote commander (front, with cover closed)



1 TV/VTR remote control switch (7)

2 VCR Plus+ buttons (44)
- VCR Plus+ button
- ONCE button
- DAILY button
- WEEKLY button

3 Number buttons and ENTER button (25)

4 DIGITAL SCAN button (48)

5 JOG/SHUTTLE button (34)

6 ◀◀◀ HI-SPEED REW button (34)

7 I◀◀ / ▶▶I INDEX SEARCH buttons (55)

8 TIMER REC ON/OFF button (38)

9 TV/VTR button (39)

10 POWER button

11 DISPLAY button (35)

12 COMMAND MODE VTR 1/2/3 switch (8)

13 ⏪/⏩ SEARCH buttons (34)

14 VOL (volume) +/– button

15 CH (channel) +/– button (25)

16 ◀◀ REW button (34)

17 ▷ PLAY button (34)

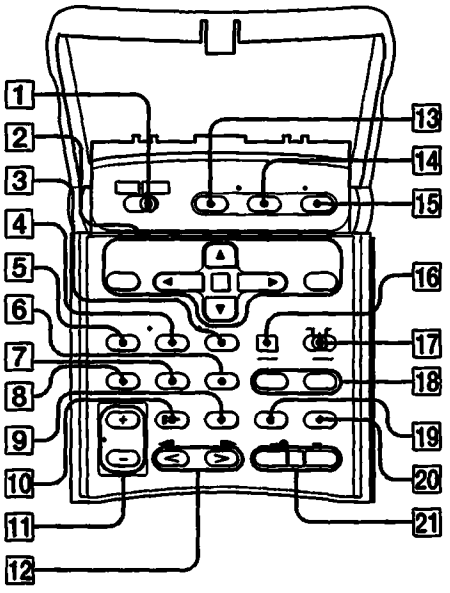
18 ▶▶ FF button (34)

19 ■ STOP button (34)

20 ❚❚ PAUSE button (34)

21 JOG dial/SHUTTLE ring (34)

Remote commander (front, with cover opened)



1 TV/VTR remote control switch (7)

2 Menu buttons (23)
MENU button
▲/▼/◄/► CURSOR buttons
EXECUTE button

3 VOICE BOOST button (49)

4 DISPLAY button (35)

5 VISUAL SCAN button (56)

6 COUNTER SELECT button (35)

7 TAPE RETURN button (48)

8 COUNTER RESET button (35)

9 X2 (two-times speed) button (48)

10 ▮► SLOW button (48)

11 CH +/– buttons (25)

12 ◄▮▮/▮▮► FRAME </> buttons (48)

13 TIMER REC ON/OFF button (38)

14 TV/VTR button (39)

15 POWER button (8)

16 TIMER CLEAR button (46)

17 COMMAND MODE VTR 1/2/3 switch (8)

18 INDEX MARK/ERASE buttons (57)

19 TAPE SPEED button (38)

20 INPUT SELECT button (37)

21 ● REC buttons (37)

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Quick reference to using the VCR

Hookup 1

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections.)
2. Insert a tape and press ▷ PLAY.

To record a program

1. Turn on the cable box.
2. Press VCR Plus+ on the remote commander.
3. Enter the program's PlusCode number.
4. Press ONCE, DAILY, or WEEKLY.
5. Insert a tape.
6. Press TIMER REC ON/OFF.
7. Leave the cable box on.

To watch TV

1. Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Turn on your cable box.
3. Set the TV to the cable box output channel (usually 2, 3, or 4).
4. Set the cable box to the channel you want to watch.

Hookup 2

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections.)
2. Insert a tape and press ▷ PLAY. If there's no picture on your TV, press the VCR's TV/VTR button until the VTR indicator comes on in the display window.

To record a program

1. Press VCR Plus+ on the remote commander.
2. Enter the program's PlusCode number.
3. Press ONCE, DAILY, or WEEKLY.
4. Insert a tape.
5. Press TIMER REC ON/OFF.

To watch TV

1. Turn off the VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Set the TV to the channel you want to watch.

Hookup 3

To play a tape

1. If you made A/V connections, set the TV to video input.
   If you didn't use A/V hookup:
   - Turn on the cable box.
   - Set the cable box to channel 3 or 4.
   - Set the TV to the output channel of the cable box (usually 2, 3 or 4).
2. Insert a tape and press ▷ PLAY.

To record a program

1. Press VCR Plus+ on the remote commander.
2. Enter the program's PlusCode number.
3. Press ONCE, DAILY, or WEEKLY.
4. Insert a tape.
5. Press TIMER REC ON/OFF.

To watch TV

1. Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Select the channel with your cable box (if you have one) or with your TV.

Hookup 4

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections.)
2. Insert a tape and press ▷ PLAY.

To record a program

1. Turn on the cable box.
2. Set the cable box to the channel you want to record.
3. Press VCR Plus+ on the remote commander.
4. Enter the program's PlusCode number.
5. Press ONCE, DAILY, or WEEKLY.
6. Insert a tape.
7. Press TIMER REC ON/OFF.
8. Leave the cable box on.

To watch TV

1. Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Turn on your cable box.
3. Set the TV to the cable box output channel (usually 2, 3, or 4).
4. Set the cable box to the channel you want to watch.

If you have any questions about this product, you may call: **Sony Customer Information Center** 1-800-222-SONY (7669)
or write to: **Sony Customer Information Center** Sony Drive, Mail Drop #T1-11, Park Ridge, NJ 07656

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